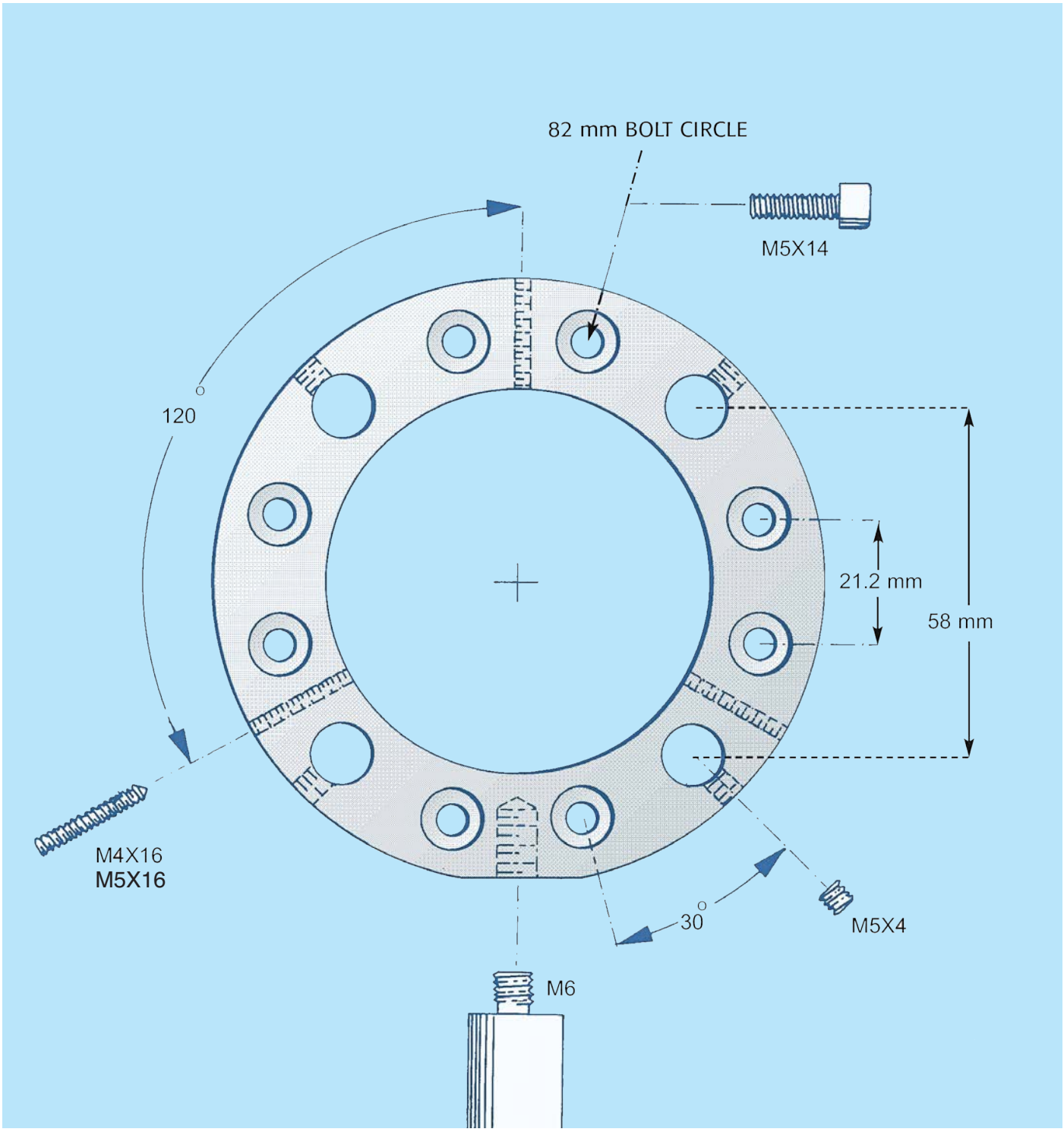
Optoform

Minioptic System 100

How to use Minioptic 100

Minioptic 100 Accessories

Minioptic 100 Applications



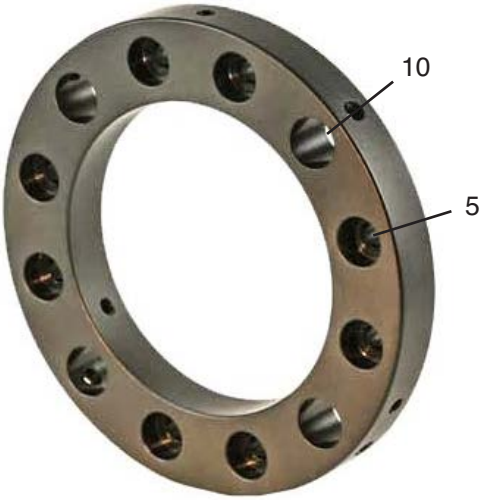
Be Different. Think Different. Do it with Taste. Make it a better product

Minioptic 100

100-100 / 100-102 Minioptic Standard Mount 65
This is the heart of the Minioptic 100 construction system. All Minioptic mounts follow the same 82 mm bolt circle. They can accommodate mounted optics up to 70 mm in diameter. Support rods are secured inside four 10 mm oval shaped bores, 90 degrees apart. This oval shape allows the mounts to freely slide along the rods, and be rigidly secured at any point.

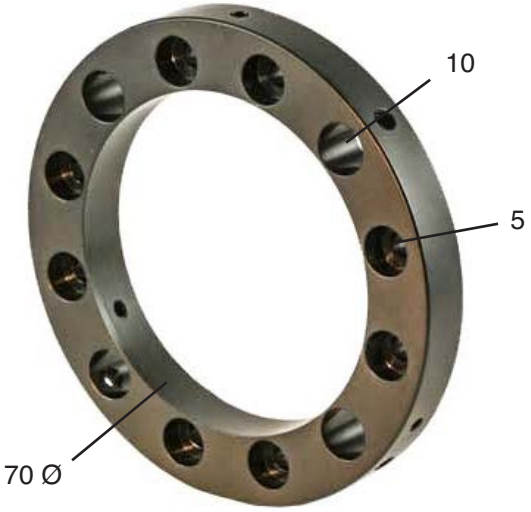
There are eight counter bores that work in conjunction with corner connectors (100-142), and oblique rods (100-154) to construct three dimensional structures. Three cone-tipped Allen set screws (00-154),120 degrees apart are utilized to secure mounted optics, and to allow centering.

100-104 Minioptic angle plate 65
Angle plates may be attached to end of rods, or act as a carrier for mounted optics, and accessories.

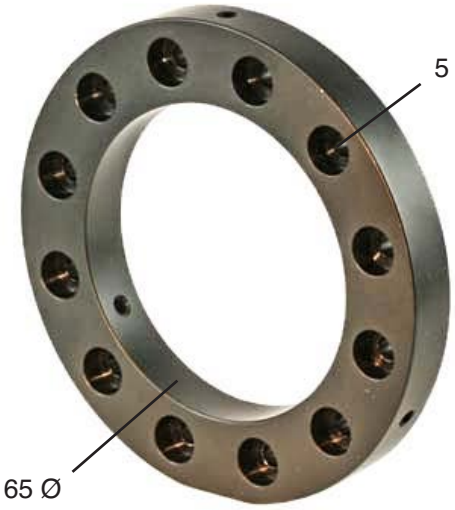


100-100 Standard Mount 65

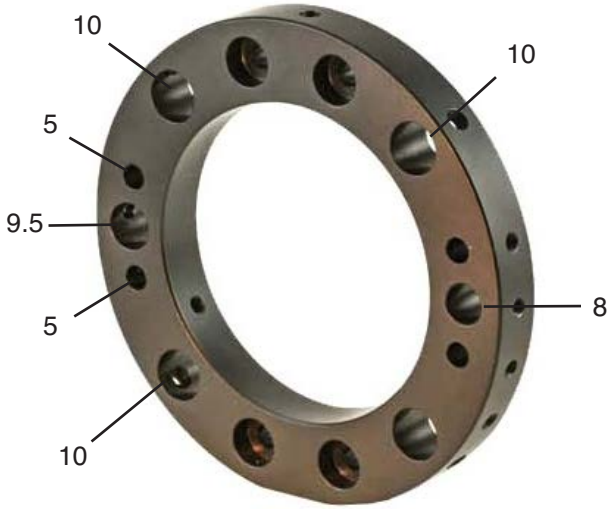
100-106 / 100-108 Minioptic Linear Bearings mount 65
Linear bearing mounts are designed to perform precise translation along the optical axis. 100-106 is the stationary platform while 100-108 is the translation mount. The setup works with a pair of linear berings, a micrometer, and a return spring.



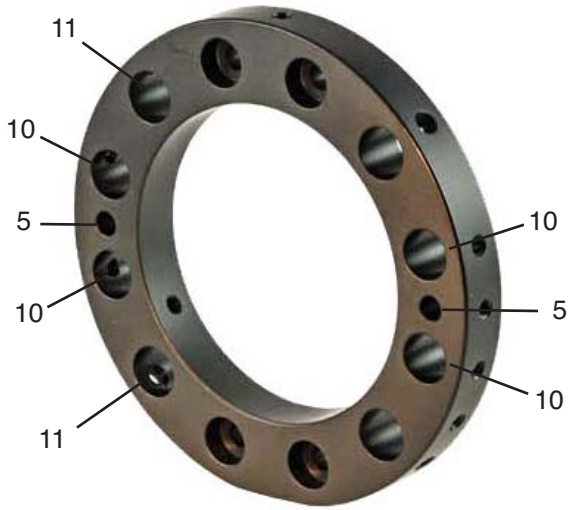
100-102 Standard Mount 70



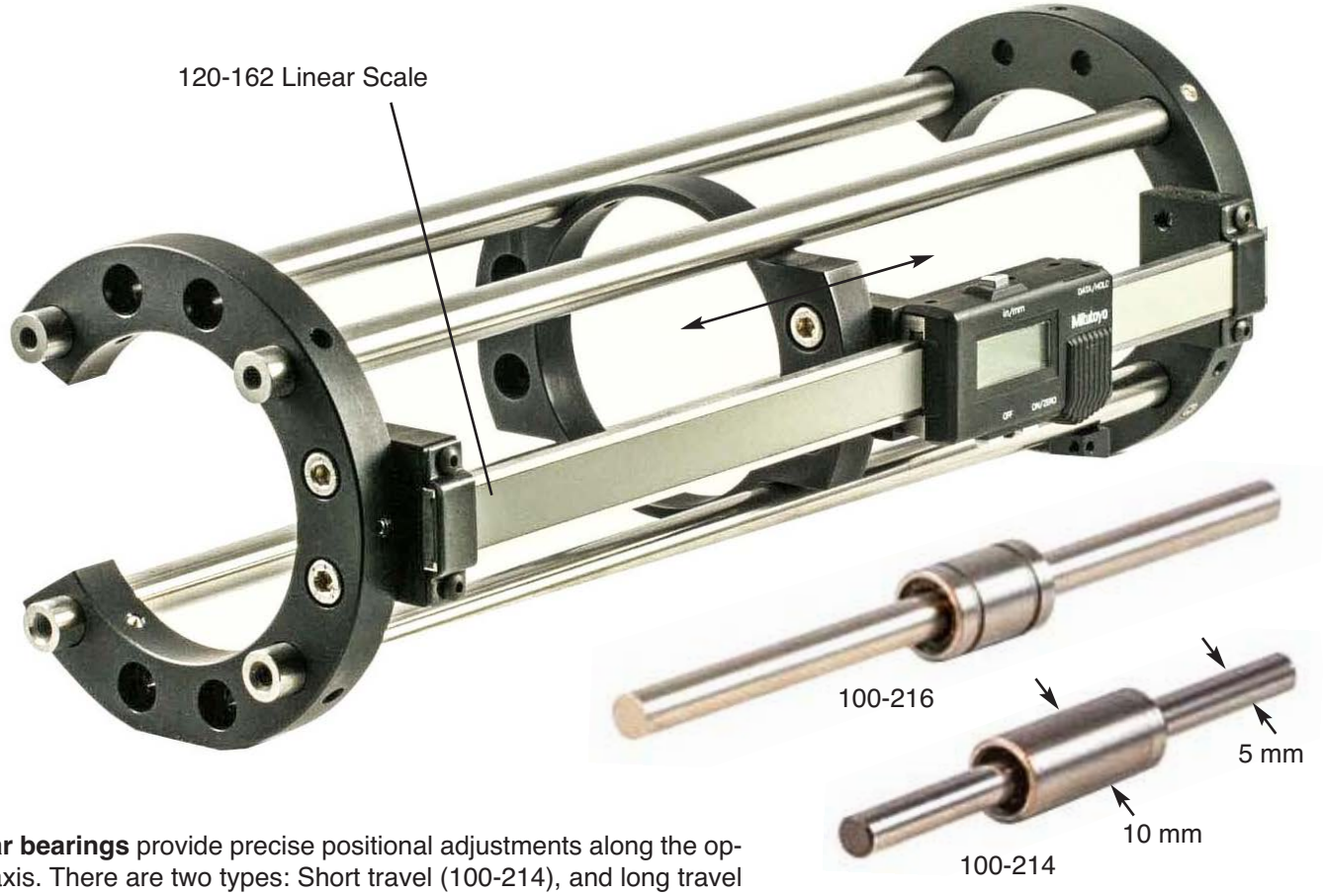
100-104 Angle Plate 65



100-106 Fixed Linear Bearing Plate 65

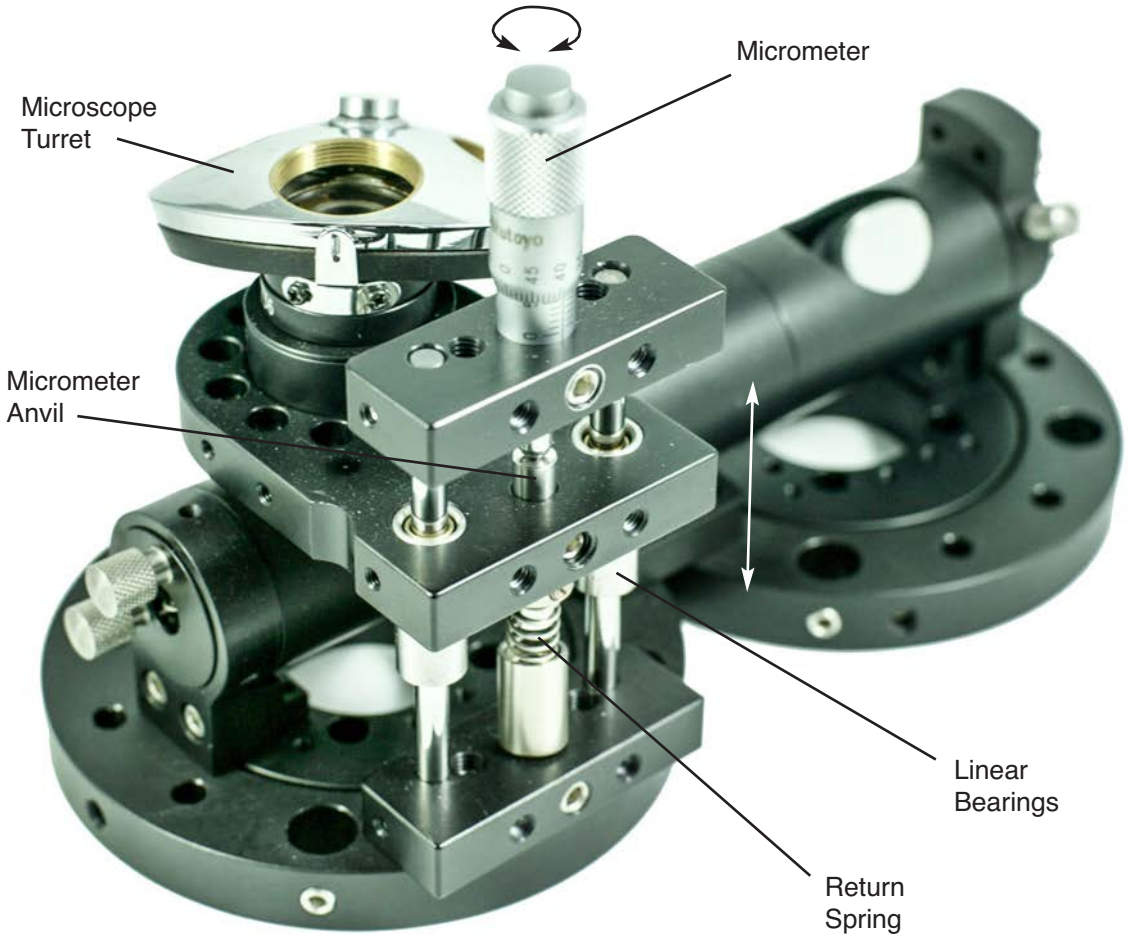


100-108 Traveling Linear Bearing Plate 65

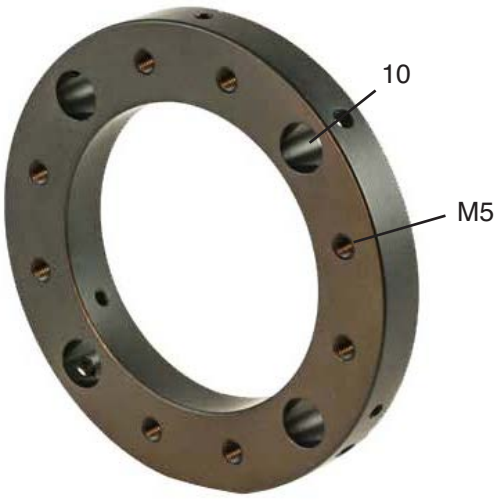


Linear Bearings

Linear bearings provide precise positional adjustments along the optical axis. There are two types: Short travel (100-214), and long travel (100-216).The short travel is intended for precise short focusing motion, i.e., in microscopy (below). The long travel linear bearing allows long travel positional adjustments, i.e., in constructing a delay line (above), combined with a digital linear scale for positional read out or feedback.



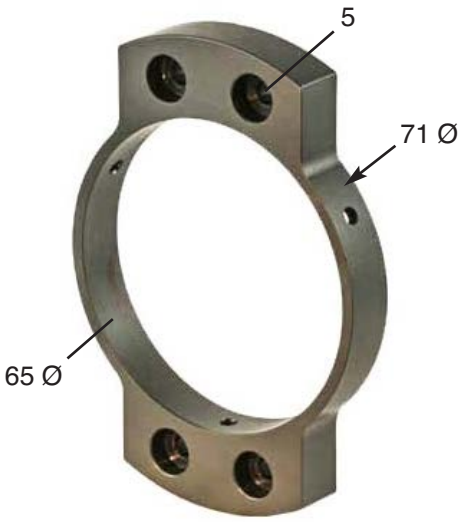
100-110 Intermediate Mount 65
Identical to 100-100 but with tapped bores instead of counterbored holes. This would allow mounting it against 100-100 via M5 allen screws, i.e., for joining two sub assemblies together. If belleville washers (00-272) are utilized in between the two mounts, a tilt function can be achieved. Both 100-100, and 100-110 have M6 post mounting thread at their base.



100-110 Intermediate Mount 65

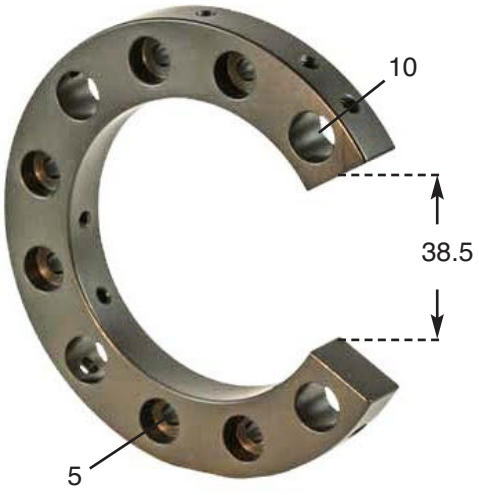
100-112 Compact Mount 65
The Compact mount can secure 65 mm mounted optics, and accessories within rods or at various angles where beam folding, or placement of an additional element is needed. It would act as a mounting plate in much less space, and less weight.

100-114 Side Access Mount 65
The side access mount allows access to mounted optics, and accessories, i.e., a diaphragm control lever, or the objectives of a microscope turret at tight spaces. The bottom side has M6 post mounting thread.

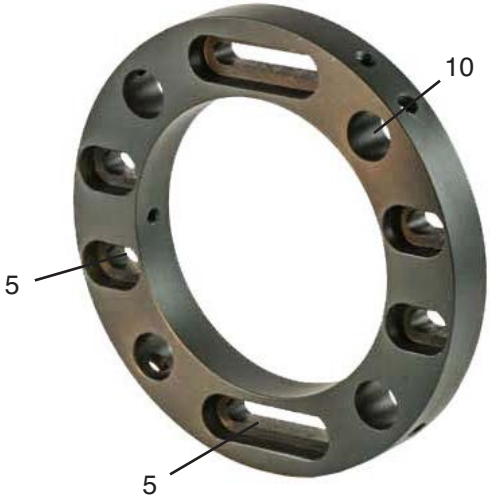


100-112 Compact Mount 65

100-120 Shift Mount 65
The shift mount would work in combination with corner connectors or intermediate mount 100-110 to shift the optical axis of any mounted optics or accessories. One application would be in conjunction with sphere 100-150 to shift the reflective plane of a glass beam splitter to compensate for the image shift caused by its thickness.



100-114 Side Access Mount 65



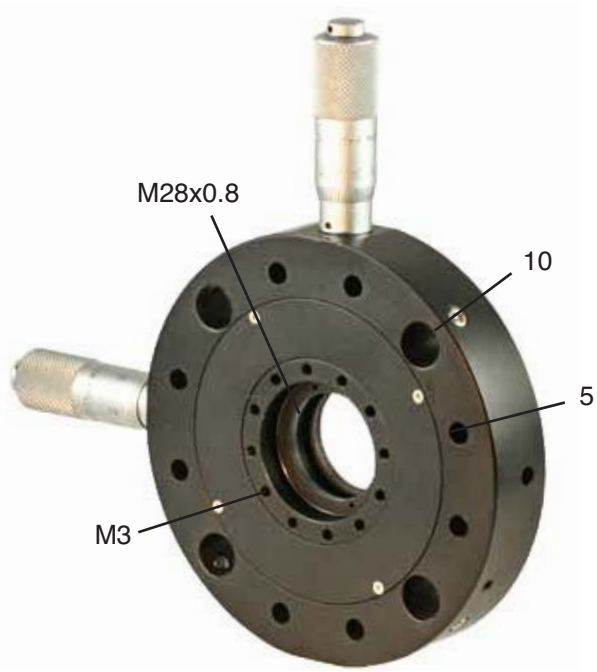
100-120 Shift Mount 65

100-122 X-Y Translation Stage 100
The X-Y stage accepts Microptic 50 mounts on one side, and provides +/- 10 mm positional adjustments. The central bore has M28x0.8 Micromax 30 threadare two retaining rings microsocpe objectives, and other accessories 25 or 25.4 mm in diameter. The base has a M6 tapped bore for post mounting.

100-126 Kinematic Tilt Mount 65
Three micrometer unit for axial tilt adjutments of mounted optics. The micrometer side of this mount has 10 mm bores for its rigid mounting along the rods. The tilting side of the mount has 13 mm apertures for clearance from the rods. The stationary side has M6 post mounting thread.

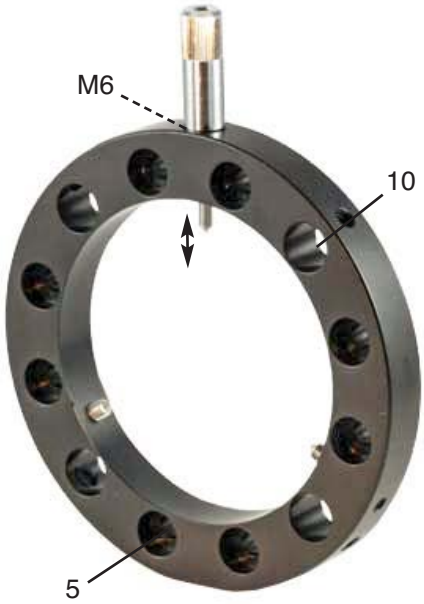
100-128 Centering mount 70
Itentical to 100-110 but with one spring loaded cone tip plunger to allow continuous centering adjustments of mounted optics in 65 mm mounting cells. The base has M6 post mounting thread.

100-130 Heavy Duty Rotary Mount
Utilizes cross roller bearings for high load, high precision rotation without deviation from optical axis. Suitable for setting up laser machining instrumentation with multiple swivel arms and fold mirrors to guide the laser beam. The mounting face has 40 mm clearance aperture. The base has M6 post mounting thread.



100-110 X-Y Stage 100

100-112 Tilt Mount 65



100-114 Centering Mount 70

100-130 HD Rotary Mount 65/40

100-132 Standard Rotary Mount
For angular adjustments of dichroic polarizers, cylinderical lenses, and microscopy samples. Accepts 64 mm lens cells, and accessories with 55 mm clearance aperture. The base has M6 thread for post mounting.

100-134 Continuous Mount 65
Identical to 100-104 but with continuous slot allowing a full range of angular adjustment between two arms of Minioptic assemblies. It can accomodate two mounting plate at right angles, and a third mount oriented at 45 degrees.

100-138 2-Rod Accessory Support
Mounts along two Minioptic rods to mount accessories (See page 11,12). It can be combined with corner connectors.

100-140 4-Way Corner Connector
Mounts two Minioptic mounts at right angles on in paralell orientation or to shift the optical axis using 100-120.

100-142 Standard Corner Connector
Mounts two Minioptic mounts at right angles.

100-144 Intermediate Corner Connector
Mounts two Minioptic mounts at right angles, one with tapped bores (100-110) to another such as 100-100.

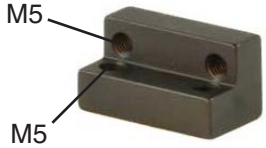
100-146 Mini/Micro Corner Connector
Mounts a Minioptic mount to a Microptic mount at right angles.

100-148 Side Connector
Mounts two Minoptic mounts side to side.

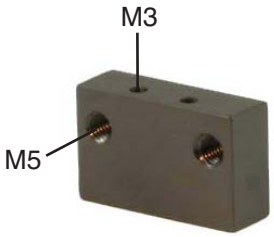
100-132 Rotary Mount 65/55

100-134 Continuous Angle Plate

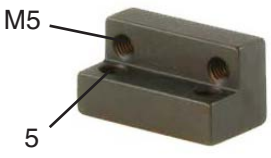
100-140 4-Way Corner connector



100-142 Standard Corner connector



100-146 Micro/Mini connector



100-144 Intermediate connector

100-148 Side connector

100-150 Sphere 100/70
Made out of a solid block of 60-61 Aluminum alloy. It is a rigid platform for buiding Minioptic setups to cleate self holding assemblies, and optical instrumentation. The sides may be covred with cover plate 100-117 to light seal the system.

100-150 Sphere 100/70

100-151 Cover plate 100
Covers unused sides of sphere 100. Made of solid 60-61 Aluminum alloy, black anodized.

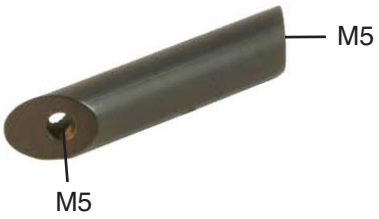
100-152 Gimbal Mount 65
Special purpose accessory intended for image evaluation at the image focal plane of a photographic lens. At one end, it ccepts microscpe objectives, and on the other end, 25 mm Micomax tube assembly containing an eyepiece or detector. The microscope could be pointed freely, at various angles, and locked in place.

100-154 Oblique Rod Support 45/45
Secures two Minoptic mounts at 90 degree orientation.

100-156 Oblique Rod Support 45/90
Secures two Minoptic mounts at 45 degree orientation.

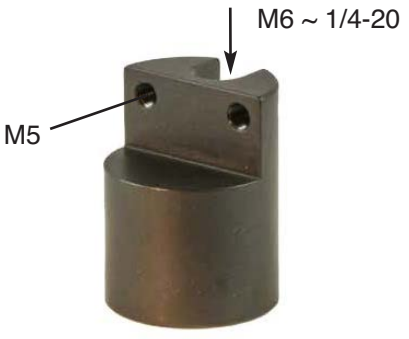
100-151 Cover Disc 100

100-164 Minioptic Support Column
Secures Minioptic assemblies on top of optical breadboards.



100-154 Oblique Rod 45/45

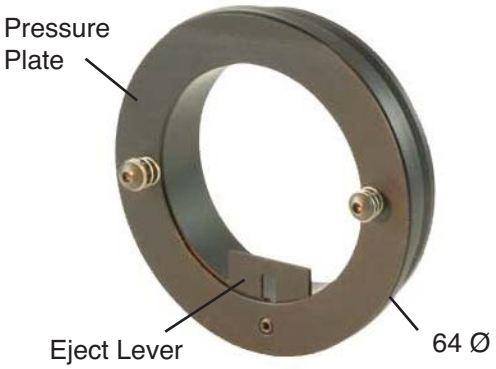
100-156 Obliqur Rod 45/90



100-164 Minioptic Support Column

100-152 Gimbal Mount 65

100-170 Filter Holder 64
For mounting 2”x2” filters or Resolution test targets, or mounted 35 mm slides with, i.e., high contrastt fourier transform masks. Has eject lever for quick release.



100-170 Filter Mount 64

100-179 ~ 83 Minioptic Centering Rings 64 / 25 ~ 50.8
Centering rings with 25 ~ 50.8 mm ID bore, and three M4 set screws,120 degrees apart. Made of Aluminum 60-61. 100-183 may be utilized to secure Microptic 50 tubing, or using 100-180 to secure Micromax 30 tubes. Centering mounts may also be machined in a lathe for mounting custom accessories.

100-184 Mini/Micro Centering Ring 64 / 30
For Micoptic 50 mounts to be integrated within Minioptic system. Accepts with counterboared M3 holes (50-100), and Mounts with M3 threaded bores (50-163).

100-186 Mini/Microptic 2x2 Centering Ring 64 / 40
For Micoptic 2x2 mounts to be integrated within Minioptic system. Accepts mounts with counterboared M3 holes (50-500), and Mounts with M3 threaded bores such as cube 50-516.

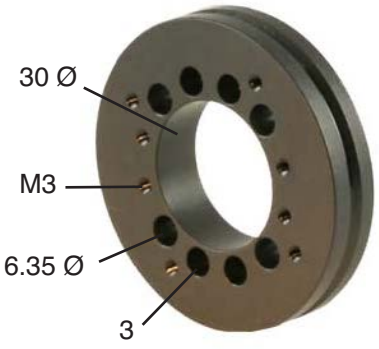
100-179 Centering Ring 64/25

100-180 Centering Ring 64/30

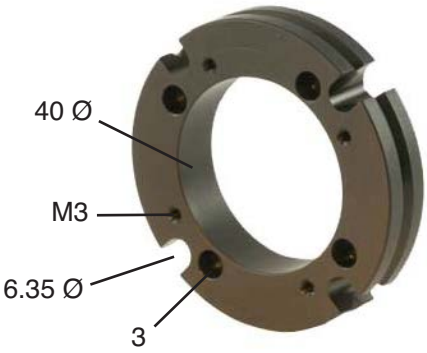
100-181 Centering Ring 64/35

100-182 Centering Ring 64/40

100-183 Centering Ring 64/50.8



100-184 Centering Ring 64/30



100-186 Centering Ring 64/40

100-206 Nikon-F Lens mount 64
Secures Nikon F lenses within Minioptic rail for testing or imaging.

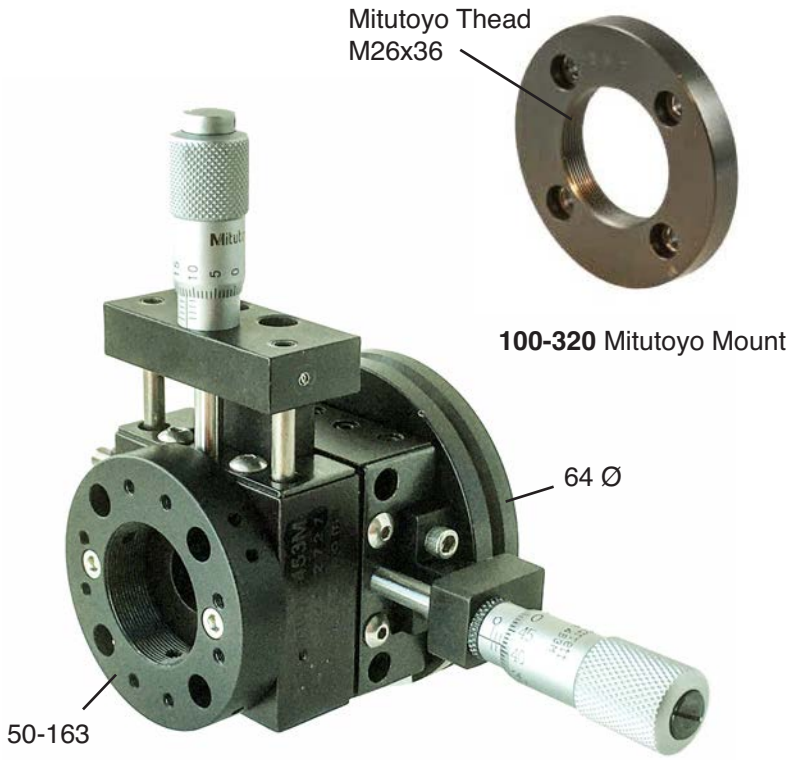
100-208 Canon EOS Lens Mount 64
Secures Canon EOS lenses within Minioptic rail for testing or imaging.

100-242 Lens Mount 64 / 40
Lens mount for 40 mm optics. Utilizes two retaining rings, identical to Micromax 60-428.

100-244 Lens Mount 64 / 50 / 50.8
Lens mount for 50 mm, and 2” optics. Utilizes two retaining rings, identical to Micromax 60-422, and 60-424.

100-300 X-Y Stage 64 with Microptic Mount
X-Y stage for Minioptic mounts with linear bearing stages +/- 13 mm travel range with Microptic mount 50-163 as its translation face. Provides clearance for Linear Bearings 100-214, and 100-216 to construct XYZ setups.

100-320 Mitutoyo Microscope Objective Mount
Replaces the Microptic mount 50-163 on X-Y stage 100-300 to directly accept Mitutoyo microscope objectives.



100-300 X-Y Stage 64/25

100-206 Nikon F Mount 64
100-208 Canon EOS Mount 64

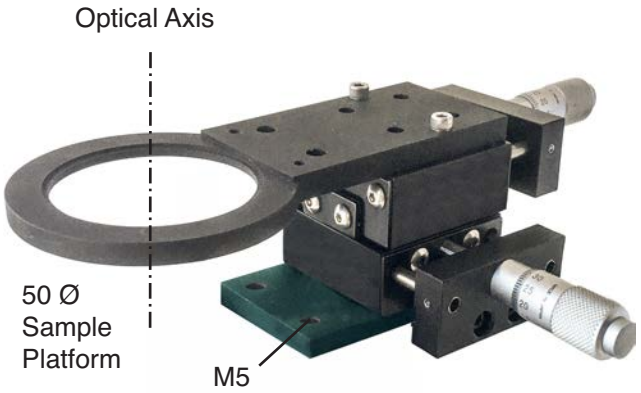
100-242 Lens Mount 64/40

100-244 Lens Mount 64/50/50.8

100-320 Mitutoyo Mount

100-248 Iris Diaphragm 64 with 40-2.5 mm aperture

100-306 X-Y Stage with Microscope Sample Holder
X-Y stage designed for Microscopy, mounts to compact mount 100-138 (See page 11, 12) or standard Minioptic mounts. Places center of sample platform along the optical axis of Minioptic system. Allows condenser optics to be as close as possible below the sample, and clears the microscope turret objectives for easy rotation during magnification change. Has two spring loaded sample securing plates.

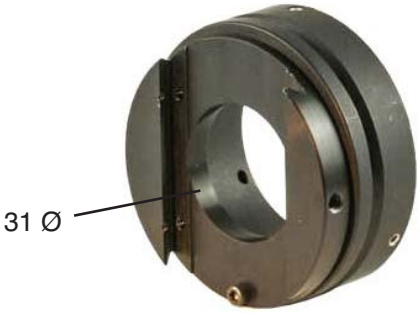


100-322 Olympus BX2M Viewfinder Adapter 64
For mounting Olympus BX2M viewfinders on Minioptic or Macroptic platforms (Any Minioptic centering disc could also be mounted on Macroptic mounts using 150-160 centering ring).

100-322 Viewfinder Adapter 64

100-328 Olympus BX2M Nosepiece Adapter 64
For mounting Olympus BX2M Manual or Motorized nosepieces on Minioptic or Macroptic platforms (Any Minioptic centering disc could also be mounted on Macroptic mounts using 150-160 centering ring). Has stop pin tto center the optical axis of microscope turret with Minioptics assemblies.

100-340 Kinematic Tilt Mount 64
Kinematic tilt mount can secure mirrors in Minioptic mounts. This tilt mount, in conjunction with 45 Deg. mirror mount 100-342 can be aligned to fold the beam at the center of sphere 100-150, or other Minioptic corner joint assemblies.



100-328 Nosepiece Adapter 64

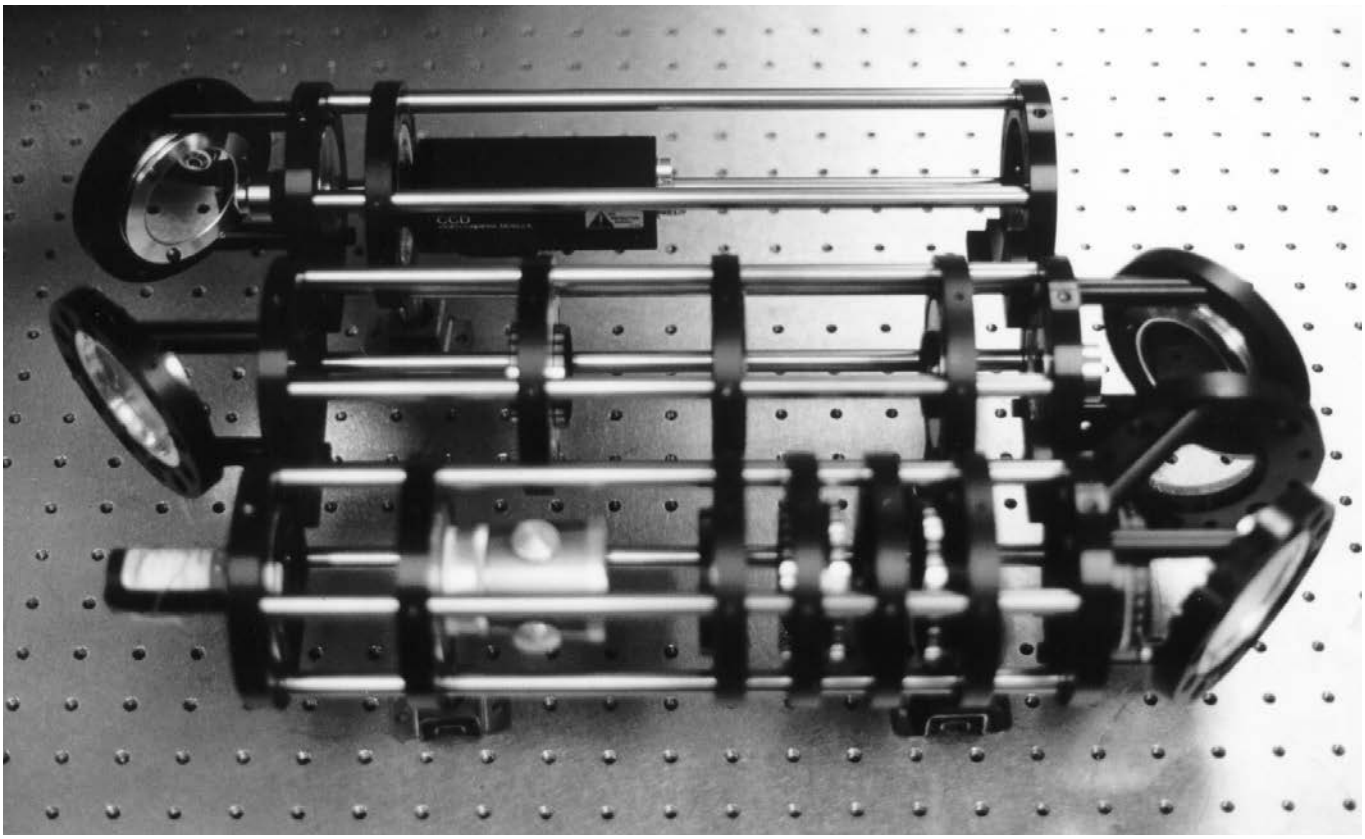
100-342 45° Mirror Mount 50.8
For securing elliptical mirrors or beamsplitters at 45 Deg. angles in Minioptic setups. Clearance aperture is 30 mm. This mount can also secure 30x30 mm Beamsplitter cubes. It has M3 bore pattern (38 mm bolt circle) on its rear end for mounting to centering disc 100-184 or Microptic mounts.

100-342 45° Mirror Mount 50.8

100-340 Kinematic Tilt Mount 64

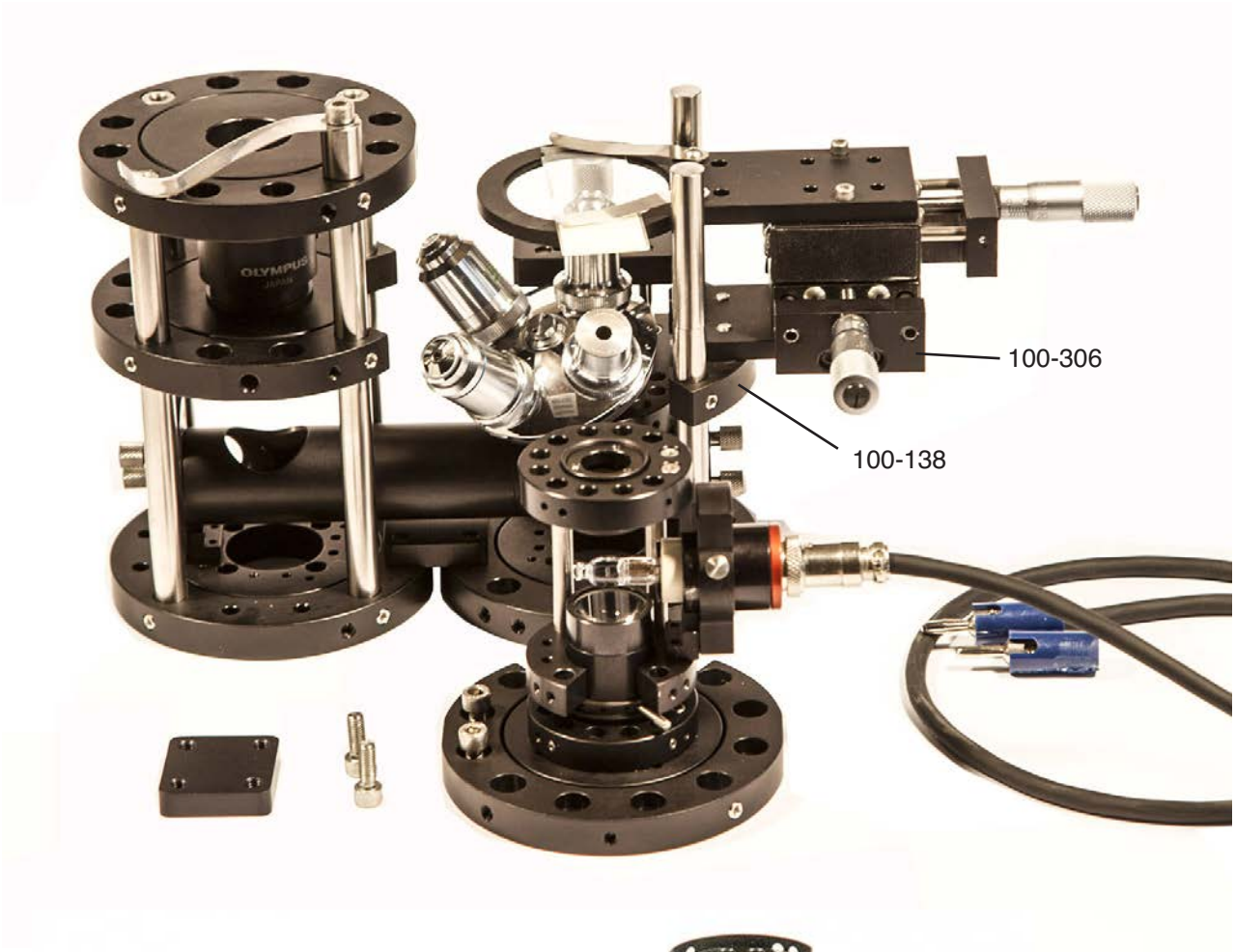
Design Example: Optical Pattern Recognition System

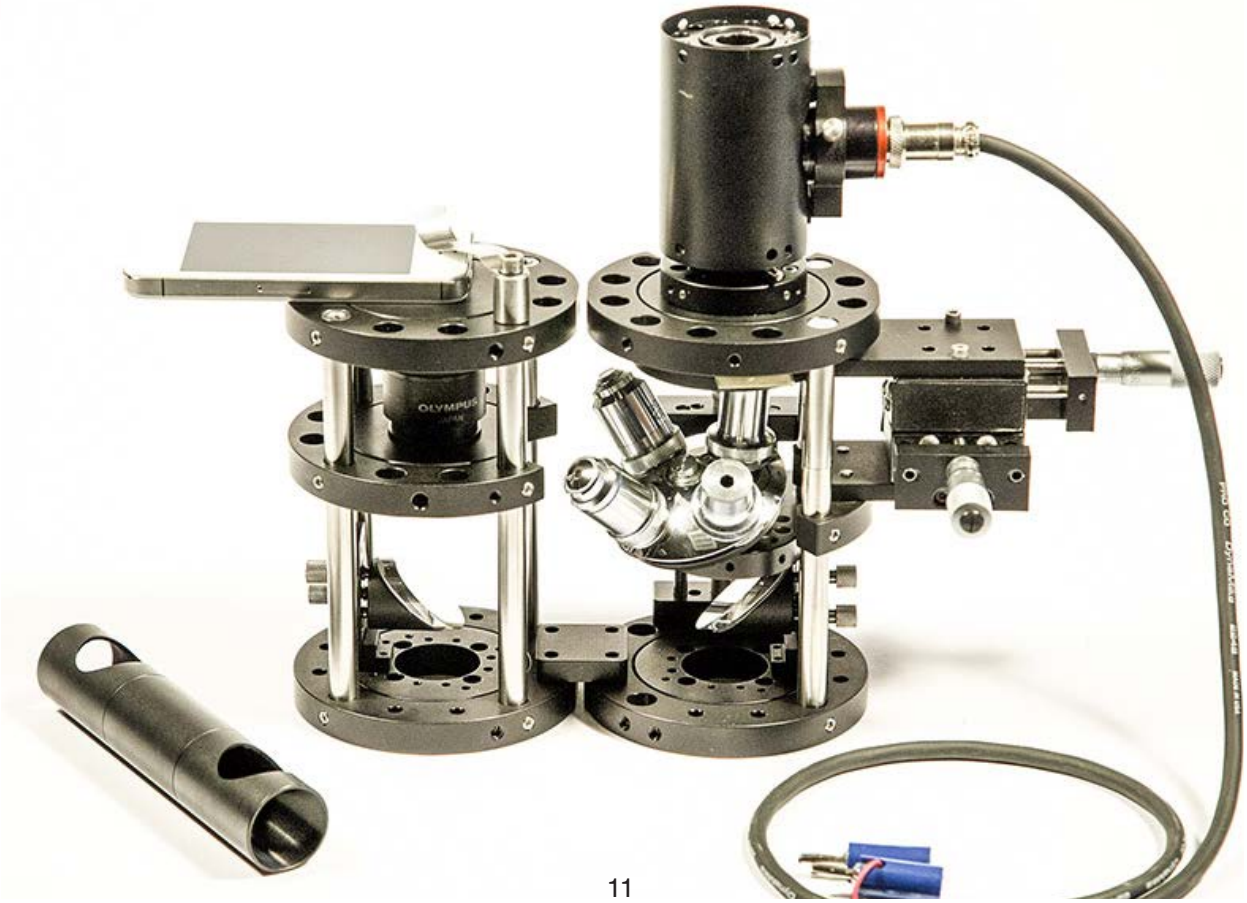
A few examples of mastery in assembling Optoform is explained here to resolve some special challenges. A very long optical layout is folded below to fit inside an Aluminum case, at Jet Propulsion Laboratory. A few tricks are shown here by an advanced user: 1) One of the optical elements in the light path is mounted in between fold mirror using oblique support rod 100-154. 2) The entire assembly has been mounted on four rubber shock mounts just by securing them to corner connectors placed at four rigid points of the assembly. This research lead to today's automated traffic ticketing.



Mobile Phone Inverted Biological Microscope

In this example, a mobile phone is utilized to capture the microscope's images. The light path is light shielded by utilizing Micomax 30 tubes. Side connector 100-148 connects two Minioptic columns, and by utilizing two fold mirrors, the height of the microscope is drastically reduced. Micoptic light source supplies the necessary illumination to the system.



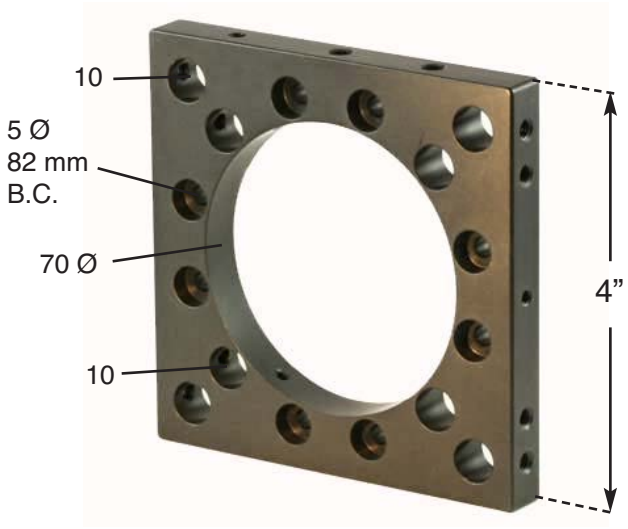


The necessary parts for the mobile phone microscope

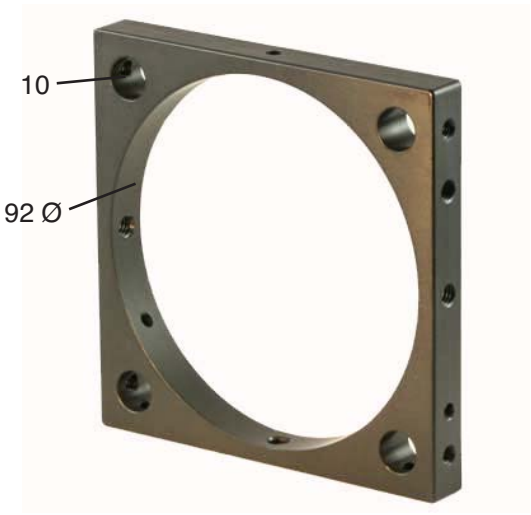
Minioptic 4x4

Minioptic 4” X 4” mounts expand the inner rod spacing of the system to 4 inches (101.2 mm) circular diameter. That means the 4” support tubes that would normally cover the entire Minioptic circular mounts could be fitted inside the rods of 4X4 mounts. The mounted optics is secured via three cone-tipped Allen set screws (00-154), 120 degrees apart.

There are two mounts to choose from: **100-506** can carry up to 4” optics cemented to a 92 mm centering ring. **100-504** is the interface plate between standard Minioptic mount 100-100 and the 4x4 mounts. Large microscope nosepiece turrets can have adequate clearance by utilizing 100-504’s outer rod spacing, while the upper viewfinder section could be downsized to standard 100-100 mounts by utilizing its inner rod spacing.



100-504 Minioptic 4x4/70

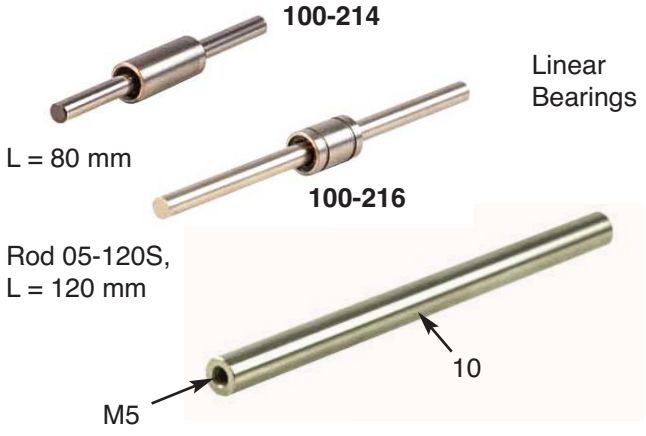


100-506 Minioptic 4x4/92

T100 Tubes are Made of 60-61 Aluminum alloy, and they slide over assembled Minoptic assemblies using rods. Mounts such as 100-100 or -104 may also be directly monted at end of tubes. Specially made M5 rod securing screwes are provided to clear the tube when it covers an assembly.

10 mm Support Rods are Made of stainless steel, case hardened to Rockwell 55 or higher. They could only be cut by abrasive cut-off wheels. One end of the rod is M5 tapped, 12.5 mm threaded depth.

T100 Tubes, L = 50 ~ 1500 mm



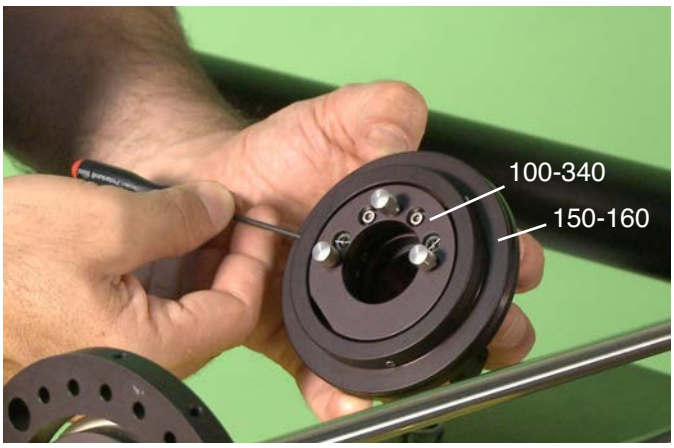
10 mm Rods, L = 50 ~ 1000 mm

00 Mounting Hardware consists of bolts, cone-tip screws, and springs specially suited for Minioptic system.

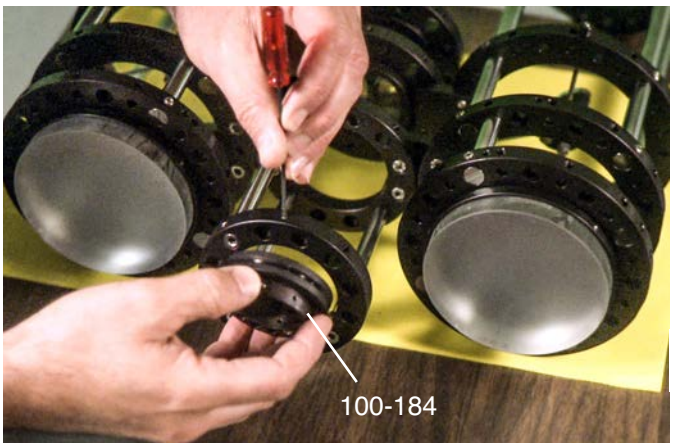
00-176	00-178	00-154	00-146	00-140	00-186	00-121
M5 x 14	M5 x 20	M5 x 16	M5 x 4	M4 x 4	M5 x 6	Plastic Plug

Utilizing Minoptic 100 Accessories

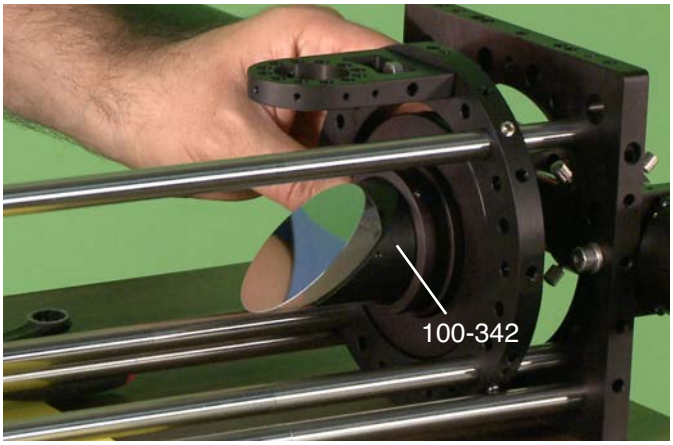
Utilizing Minioptic 100, in this stellar interfrometer setup is a good example of how each Optoform piece is designed to work with every other part in the system. There is an instructional video on Youtube for how this is put together: https://youtu.be/gsAN2fM_VS0



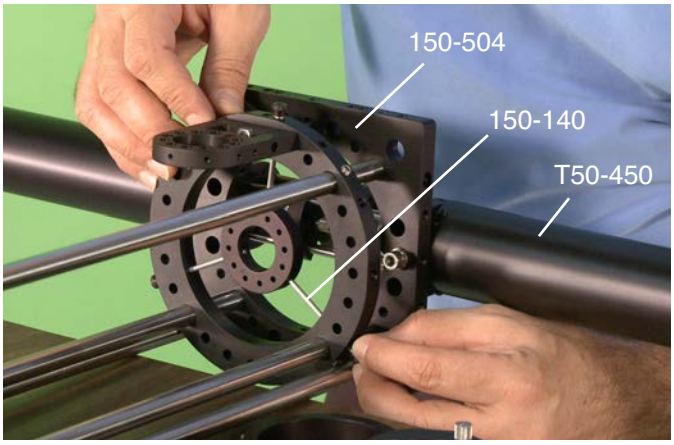
Stepping up Minioptic 100 accessories to fit inside Macroptic 150 mounts via Macroptic center ring 150-160

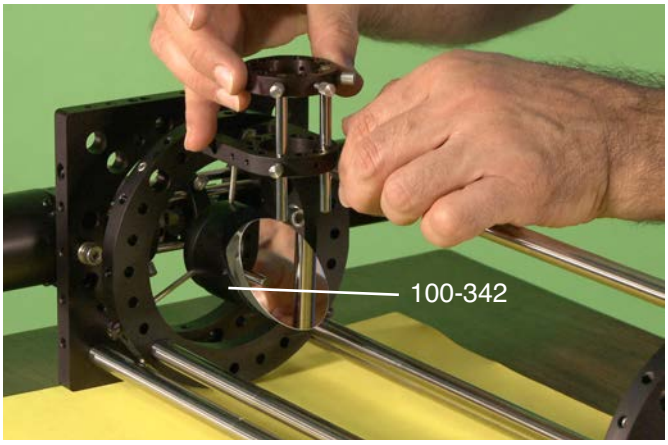


Side mounting of Minioptic 100 with Macroptic 150 via side connector 150-216.



Stepping up Minioptic 100 accessories, i.e., **100-340** to fit inside Macroptic 150 mounts via Macroptic 150 centering ring 150-160.





Securing 45 Deg. mirror mount **100-432** inside Macroptic 150-100 via spider assembly 150-140. There is a 38 mm dia. threaded bore pattern on the back of this mirror mount that can be secured directly on Microptic 50 mounts.

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