

Want More **Flexibility?** Try Our
TECHSPEC® CAGE SYSTEM



**FLEXIBLE & MODULAR
STRUCTURE**

**DIVERSE COMPONENT
OFFERING**

**IDEAL FOR PROTOYPING
& EXPERIMENTATION**



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INTRODUCTION TO THE TECHSPEC® CAGE SYSTEM

- Ideal for Prototyping
- High Durability for Continuous Lab Use
- Limitless Customization and Adaptability

Designed for modularity and flexibility, optical cage systems are high precision alternatives to complex optical alignment systems. Constructed of rods and plates, cage systems allow the user to continuously modify the system's design by adding additional components such as optical mounts and angular brackets. Optical cage system components are purchased individually, enabling limitless customization and adaptability.

GETTING STARTED

KINEMATIC & TIP/TILT MOUNTS

Mount and align mirrors, beamsplitters, and filters quickly and easily

BASIC CAGE PLATE

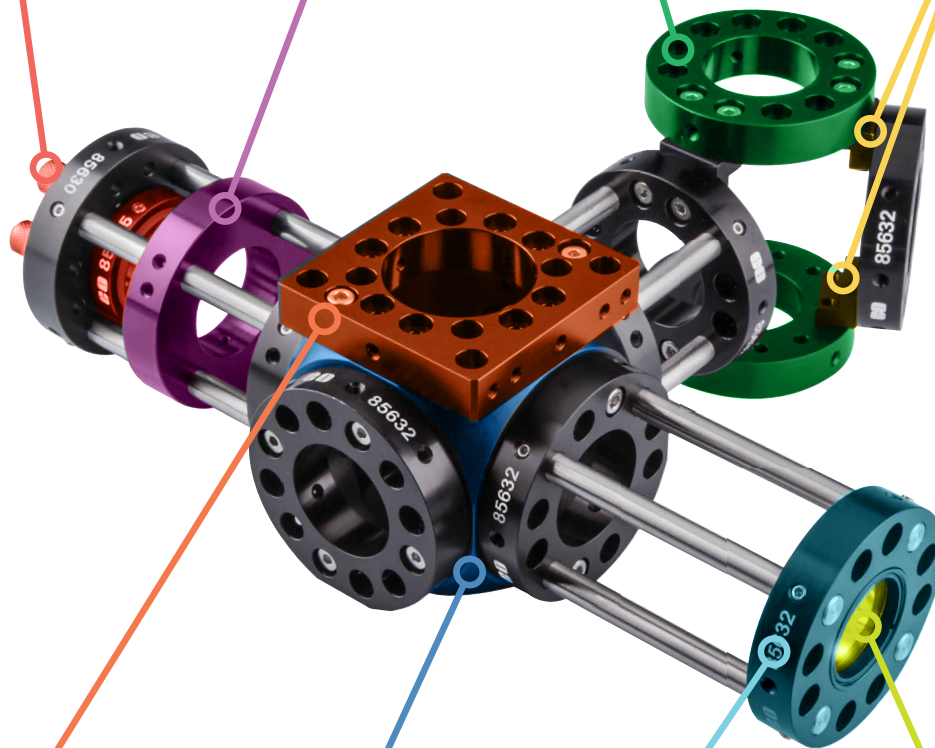
Used to build basic structure and hold optic mounts

ANGLE PLATES

Used in pairs, add 30°, 60°, or 90° bends in optical path

ANGLE BRACKETS

Are used to mount plates orthogonally and build cage structure



SQUARE PLATES

Have a larger bolt circle to allow larger components to fit within an optical cage system

SPHERES

Add rigidity, 90° optical path bends, and can be used to mount beamsplitters or filters

STANDARD CAGE PLATES

Used to build basic structure, attach to spheres or angle brackets, and hold optic mounts

MOUNTING OPTICS

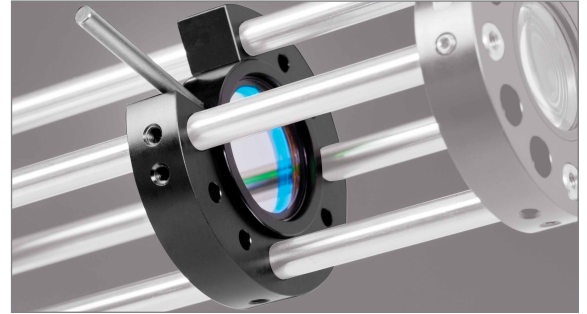
Optics mounted with Cage System Optic Mounts or C-Mount Components can be secured within all Cage Plates

CAGE SYSTEM APPLICATION EXAMPLES

Interchangeable Optic Mount

Pairing the Interchangeable Optic Mount with the Side Access Mounting Plate simplifies adding or removing optical components within a system. The 60° cutout in the Side Access Mounting Plate enables the Interchangeable Optic Mount to easily slide in and out of place, avoiding disassembly and reassembly of the system. Set screws secure the Side Access Mounting Plate in the Interchangeable Optic Mount – flexibility without loss of precision.

INTERCHANGEABLE OPTIC MOUNT		
Parts Used	Stock No.	Quantity
Interchangeable Optic Mount	#85-717	1
Side Access Mounting Blade	#85-641	1

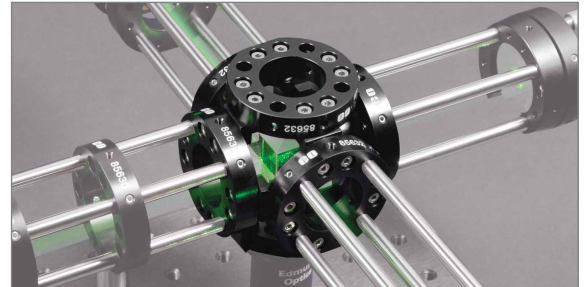


Interchangeable optic mount and side access mounting plate

Building a Cube

The cube is a fundamental design that enables the addition or intersection of beam paths, or bends the system by 90°. While a TECHSPEC® Cage Sphere is superior in rigidity, building a cube offers increased flexibility, and can be designed using Standard Mounting Plates and Corner Connectors. By using Standard Mounting Plates of different inner diameters, the cube can be customized to best fit the application.

CAGE PLATES AND BRACKETS		
Parts Used	Stock No.	Quantity
Standard Mounting Plates	#85-632	6
Angle Brackets	#85-664	8



Cage cube built with standard cage plates and angle brackets

Angle Adjustment with Swivel Plates

Angle Adjustment Plates are used to construct fixed 30°, 60°, and 90° bends in a cage system's optical path. For applications requiring customized angular positions, swivel joints are an ideal alternative to angle adjustment plates. For example, a pair of #85-670 Swivel Adapter Plates can be used with a single #85-692 Post Mount Adapter to enable 180° of continuous angular adjustment. Each swivel adapter plate features three M3 set screws which allow the angle to be locked into place.

CAGE ADAPTERS AND PLATES		
Parts Used	Stock No.	Quantity
Swivel Adapters	#85-670	4
Standard Mounting Plates	#85-632	4
Post Mount Adapters	#85-692	2
Angle Brackets	#85-664	2



Swivel adapters are used to create customized angular positioning

SO MUCH MORE ONLINE AT WWW.EDMUNDOPTICS.COM/CAGE-SYSTEM

3D MODELS



INSTRUCTIONAL VIDEOS



APPLICATION EXAMPLES



INTEGRATION TIPS



TECHSPEC® CAGE SYSTEM MOUNTING PLATES



- Provide Basic Cage Structure
- Anodized Aluminum Plates
- Rods are Mounted at a 38mm Bolt Circle

TECHSPEC® Cage System Plates are critical in the design and construction of a TECHSPEC® Cage System. To secure cage system tubes and optics, the highly durable anodized aluminum plates feature 25mm or 30mm inner diameters with three M3 set screws placed at 120°. Rods are mounted within a 38mm bolt circle.

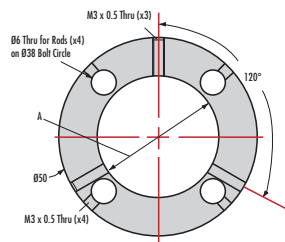
BASIC MOUNTING PLATE

- Simplified Plate Design for Easy Integration of Optics, 10mm Thick
- Rods Mounted at a 38mm Bolt Circle
- Three M3 set screws secure Optic or mount inside plate



BASIC MOUNTING PLATE	
A	Stock No.
25mm	#88-196
30mm	#88-197

Basic Mounting plate



Units: mm

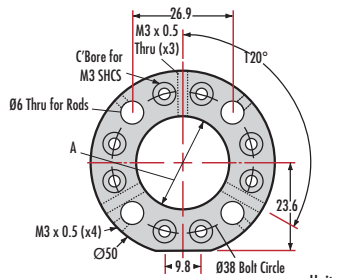
STANDARD MOUNTING PLATES

- Anodized Aluminum Plates for Basic Cage Structure, 10mm Thick
- Rods Mounted at a 38mm Bolt Circle
- Three M3 set screws secure Optic or mount inside plate



STANDARD MOUNTING PLATES		
A	B	Stock No.
25mm	M6	#85-632
30mm	M6	#85-630
25mm	1/4-20	#85-633
30mm	1/4-20	#85-631
C-Mount (1" x 32TPI)	—	#87-419

Standard Cage Plate



Units: mm

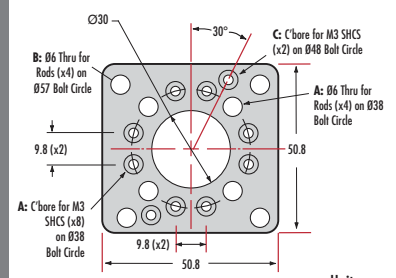
2" SQUARE INTERFACE PLATE

- Anodized Aluminum Plates for Basic Cage Structure, 10mm Thick
- Steps between a 38mm and 57mm Bolt Circle
- Connects to 43mm port of Cage Sphere



2" SQUARE INTERFACE PLATE	
Feature	Purpose
A: 38mm bolt circle	Matches rod spacing of standard mounting plates. Allows optics or mounts with larger diameters
B: 57mm bolt circle	to be mounted in system. Connects to same rod spacing as 2" square plates
C: 48mm bolt circle	Used to attach Interface Plate to the 43mm port of Cage Sphere #85-624
Stock No.	#85-737

Square Interface Plate



Units: mm

4-ROD INSERTION PLATE

- Easily Add Optics to an Existing Cage System Without the Need for Disassembly



Visit our website for a video of how this plate is used

4-ROD INSERTION PLATE

Outer Dia.	Inner Dia.	Stock No.
50mm	25mm	#85-643

2" SQUARE MOUNTING PLATES

- Larger 57mm Bolt Circle to Hold Large Optics



2" SQUARE MOUNTING PLATE

Inner Diameter	Stock No.
35mm	#85-735
40mm	#85-738
45mm	#85-740

6MM CAGE SUPPORT RODS

- Polished 440 Stainless Steel Rods with M3 Tapped Ends

6MM CAGE SUPPORT RODS			
Image	Dia. (mm)	Length (mm)	Stock No.
	6	20	#85-484
	6	30	#85-485
	6	50	#85-486
	6	75	#85-487
	6	100	#85-488
	6	120	#85-489
	6	150	#85-490
	6	200	#85-491
	6	300	#85-492
	6	450	#85-493



Integration Tip: Use C-Mount Fiber Adapters with the C-mount Standard Cage Plate (#87-419) to easily integrate FC or SMA Fibers.

TECHSPEC® CAGE SYSTEM ANGULAR ADJUSTMENT COMPONENTS


- Multiple Angular Adjustment Components Available
- Enable the Redirection of the Optical Path
- Angular Adjustment Options for 30 - 180°

TECHSPEC® Cage System Angular Adjustment options are available to redirect the optical path of the TECHSPEC® Cage System. Cage spheres allow for the integration of large optical components, enable 90° bends, and are available with cover disks for blocking unused optical paths. Angle plates are used in pairs with standard cage plates, and introduce 30, 60, or 90° bends. Angle plates can also be used with angle brackets to connect plates orthogonally. Swivel joints, which feature a lockable position, and continuous angular adjustment plates are also available for adding 180° of continuous angular adjustment.

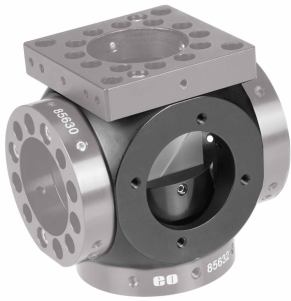


CAGE SPHERES

- Introduce 90° Bends in Optical Path
- Sphere with 43mm Port Integrates Larger Optic
- Cover Disks Block Unused Optical Paths




CAGE SPHERES		
Description	Outer Dia.	Stock No.
30mm ports (x5), 43mm port (x1)	50.8	#85-624
30mm ports (x6)	50.8	#85-625
43mm port cover disk	50.8	#85-626
30mm port cover disk	50	#85-627

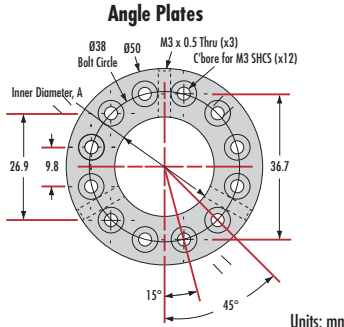


ANGLE PLATES

- Introduce 30°, 60°, or 90° Bends in the Optical Path
- Used in Pairs with Standard Cage Plates
- Use Angle Brackets to Connect Plates Orthogonally



ANGLE PLATES	
A	Stock No.
25mm	#85-617
30mm	#85-622



Angle Plates

Ø38 Bolt Circle, Ø50, M3 x 0.5 Thru (x3) Chore for M3 SHCS (x12)

Inner Diameter, A


26.9, 9.8, 36.7

15°, 45°

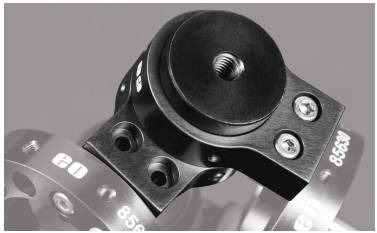
Units: mm

SWIVEL JOINTS

- Add 180° of Continuous Angular Adjustment
- Position Can be Locked



BUILDING A SWIVEL JOINT ASSEMBLY		
Qty Needed	Description	Stock No.
4	Swivel Adapter	#85-670
2	M6 Post Adapter	#85-692
2	1/4-20 Post Adapter	#85-701
2	Angle Bracket	#85-664
2	Standard Cage Plates	



[Visit our website for a video on how to assemble a swivel joint](#)

CONTINUOUS ANGULAR ADJ. PLATE

- Add 180° of Continuous Angular Adjustment



CONTINUOUS ANGLE PLATE ASSEMBLY		
Qty Needed	Description	Stock No.
1	Continuous Angle Adj. Plate	#85-650
2	Angle Bracket	#85-664
2	Standard Cage Plates	

ANGLE BRACKETS

- Connect Plates Orthogonally



ANGLE BRACKETS		
Description	Stock No.	
Basic Angle Bracket	#85-664	
M6 Angle Bracket	#85-665	
1/4-20 Angle Bracket	#85-666	

CAGE SYSTEM ADAPTER PLATE

- Adapts 30mm Rod Spacing (Common in Competitive Cage Systems) to TECHSPEC® Cage System's 38mm Bolt Circle



CAGE SYSTEM ADAPTER PLATE	
Description	Stock No.
Cage System Adapter	#86-846

Integration Tip: Use a Cage Sphere (#85-624) with a 25mm Standard Cage Plate (#85-632 or #85-633) and Beamsplitter Adapter #85-688 to add in-line illumination

TECHSPEC® CAGE SYSTEM ADJUSTABLE OPTIC MOUNTS

- X-Y Positioning Stage for Easy Adjustable
- Objective Adapters for Easy Integration in Microscopy Applicators
- Easily Securable Within Inner Diameter of Basic Cage Plates



Available in multiple types, TECHSPEC® Cage System Adjustable Optic Mounts provide a wide range of mounting configurations. The adjustable optical mounts are ideal for beam steering assemblies.

TECHSPEC® CAGE SYSTEM ADJUSTABLE OPTIC MOUNTS				Kinematic, tip/tilt and X-Y Adjustment Mounts and Plates	
Image	Description	Outer Diameter (mm)	Inner Diameter (mm)	Clear Aperture (mm)	Stock No.
	Fine Screw Kinematic Mounting Plate	50	30	30	#85-663
	25mm Tip/Tilt Solid Table	25	—	—	#86-026
	25.4mm Kinematic Mount	30	25.4	12.7	#85-695
	45° Tip/Tilt Mount for 25mm Mirror	25	—	10	#85-696
	Square Tip/Tilt Optic Mount	25	—	—	#85-710
	25.4mm Dia. Adapter for #85710	29 x 32.5	25.4	25.4	#85-713
	XY Micro Positioning Stage Plate	25	RMS Thread	7	#85-722

TECHSPEC® CAGE SYSTEM LINEAR TRANSLATION ASSEMBLIES

- Compact Design with Built-In Translation Assembly
- Configurable for 1/2" or 1" Travel
- Accepts Micrometers with 3/8" Shank

TECHSPEC® Cage System Linear Translation Assemblies are used to add linear translation to a TECHSPEC® Cage System setup. The built-in translation assembly enables coarse positioning along the cage rods. Once fixed to the cage rods, fine translation can be done using a micrometer drive. By adding additional springs, the 1/2" standard travel can be extended to 1". TECHSPEC® Cage System Linear Translation Assemblies are available in two options: simple translation utilizes 6mm rods and standard plates, while ball bearing translation utilizes ball bearing slides for low-friction translation. Note: Micrometer/drive mechanism sold separately.



visit www.edmundoptics.com/cage-translation for more information

SIMPLE TRANSLATION			*One Required if Shaft Collars Are Used
Required	Description	Features	Stock No.
Required	Micrometer Mount Kit	Micrometer Holder (x1) Protective Steel Plate (x1) Compression Springs 2pk, #86-838 (x1)	#85-618
Two Required*	25mm Standard Cage Plate, M6 30mm Standard Cage Plate, M6 25mm Standard Cage Plate, 1/4-20 30mm Standard Cage Plate, 1/4-20	One plate is used for travel and the second is fixed	#85-632 #85-630 #85-633 #85-631
One Required	Micrometer or Actuator with 3/8" Shank	Choose based on type, travel, and graduation	See Table Below
One Optional	Shaft Collar (2pk)	Can be used instead of a fixed plate	#86-845
One Optional	Compression Springs (2pk)	Used to extend travel range to 1"	#86-838

BALL BEARING TRANSLATION			
Required	Description	Features	Stock No.
Required	Ball Bearing Translation Assembly Kit	Micrometer Mount Kit, #85-618 (x1) Travel Bearing Plate, #85-620 (x1) Fixed Bearing Plate, #85-619, (x1) Linear Bearing Bushings 2pk, #85-686 (x1) Rods 3mm Dia x 50mm L, #85-470 (x2)	#86-847
One Required	Micrometer or Actuator with 3/8" Shank	Choose based on type, travel, and graduation	See Table at Right
One Optional	Compression Springs (2pk)	Used to extend travel range to 1"	#86-838

COMPATIBLE MICROMETERS			
Type	Travel	Graduation	Stock No.
Micrometer Drive	0.5"	0.001"	#58-660
Fine Screw Drive	0.5"	-	#58-667
Micrometer Drive	13mm	0.01mm	#58-661
Differential Drive	0.75"	-	#58-670
Digital Drive	1"	0.00005"	#58-668
Micrometer Drive	1"	0.001"	#58-662
Micrometer Drive	25mm	0.01mm	#58-663

TECHSPEC® CAGE SYSTEM COMPONENTS KIT

- Contains Necessary Parts to Build Basic Optomechanical Systems
- Ideal for Experimentation or Prototyping
- Includes Mounting Options for 12.5mm and 25mm Optical Components

The TECHSPEC® Cage System Components Kit contains an assortment of TECHSPEC® Optical Cage System components, including plates, rods, mounts, and the accessories needed to construct basic optomechanical systems. Designed to simplify the selection and purchase process, the TECHSPEC® Cage System Components Kit is ideal for researchers, engineers, or educators, and for demonstration or prototyping purposes. **Note:** A storage cabinet is included that provides room for expansion.



CONTENTS OF COMPONENTS KIT	
22 Plates for Cage Construction	
22 Support Rods with lengths ranging from 50mm to 300mm	
12 Optical Components Mounts	
15 Accessories Including Spheres, Corner Connectors, and Adapters	
Assembly Screws and Tools	

TECHSPEC® CAGE SYSTEM COMPONENTS KIT	
Description	Stock No.
Basic Components Kit	#87-314

CONTENTS OF COMPONENTS KIT			
Description	Usage	Stock No.	Quantity
25mm Standard Cage Mounting Plate	Cage Construction Plate with M6 tapped hole	#85-632	8
30mm Standard Cage Mounting Plate	Cage Construction Plate with M6 tapped hole	#85-630	8
30mm Square Interface Plate	Provides larger rod spacing than standard plate	#85-737	2
30mm Angle Plate	Used to introduce 30°, 60°, or 90° bends in the optical path	#85-622	2
Cage Sphere w/ 30mm Ports (x5), 43mm Port (x1)	Cube for intersecting optical paths	#85-624	1
30mm Port Cover	Cover for unused cube ports	#85-627	1
Plate Corner Connector	Used to connect cage plates at 90° angles	#85-664	8
6mm Dia. x 50mm Rod	Polished 440 stainless steel rods for basic cage construction	#85-486	2
6mm Dia. x 100mm Rod		#85-488	4
6mm Dia. x 120mm Rod		#85-489	6
6mm Dia. x 150mm Rod		#85-490	6
6mm Dia. x 300mm Rod		#85-492	4
M3 x 0.5 x 2.5mm SHSS		Used to lock 6mm rods in place	-
M3 x 0.5 x 6mm SHSS	Used to secure optic mounts and accessories	-	50
M3 x 0.5 x 10mm SHCS	Used to assemble cage components	-	50

CONTENTS OF COMPONENTS KIT			
Description	Usage	Stock No.	Quantity
Insertion Plate	Allows additions to a cage system without the need for disassembling the rods	#85-643	1
Filter Holder Plate	Easily swap filters within a cage system	#86-018	1
Interchangeable Filter Holder	Easily swap filters within a cage system	#85-649	2
12.5mm Dia. Lens Mount	Lens mounts designed to fit into cage plates	#85-549	2
12.7mm Dia. Thick Lens Mount		#85-547	2
25/25.4mm Dia. Lens Mount		#85-587	2
25/25.4mm Dia. Thick Lens Mount		#85-588	2
25mm Simple Optic Mount		#85-510	1
25/25.4mm Cube Beamsplitter Mount		Cube beamsplitter mount fits within 25mm cage plates	#85-688
Blank Disk	Block beam path or to customize a simple mount	#85-539	1
C-Mount Adapter	Allows for easy interface to C-mount components	#85-719	4
Cage System Adapter Plate	Adapts 30mm rod spacing of other cage systems to the TECHSPEC® Optical Cage System	#86-846	2
Allen Key for M3 SHSS	Tools for cage assembly	#55-452	1
Allen Key for M3 SHCS	Tools for cage assembly	#57-445	1
Optical Component Cabinet	Storage cabinet for the cage system components kit	#59-815	1

TS ACHROMATIC LENS KITS



ACHROMATIC LENS KITS		
Size:	12.5mm Dia.	25mm Dia.
# of Lenses:	13	17
Included Focal Lengths (mm):	14, 20, 25, 30, 35, 40, 45, 50, 60, 75, 80, 90, 100	30, 35, 40, 45, 50, 60, 75, 80, 100, 125, 150, 175, 200, 225, 250, 300, 400
MgF ₂ Coating	#54-673	#52-306
VIS 0° Coating	#48-540	#48-615
VIS-NIR Coating	#65-984	#65-985

TS SIMPLE LENS KITS



SIMPLE LENS KITS		
Size:	12mm Dia.	25mm Dia.
# of Lenses:	14	24
Included Focal Lengths (mm):	PCX: 12, 24, 36, 48, 60 DCX: 12, 24, 36, 48, 72 PCV: -12, -24, -48; DCV: -12"	PCX: 25, 50, 75, 100, 125, 150, 175, 200, 400 DCX: 25, 50, 75, 100, 125, 150, 175, 200, 400 PCV: -25, -50, -100 DCV: -25, -50, -100
MgF ₂ Coating	#55-249	#52-305
VIS 0° Coating	#48-163	#48-613
VIS-NIR Coating	#48-539	#48-614

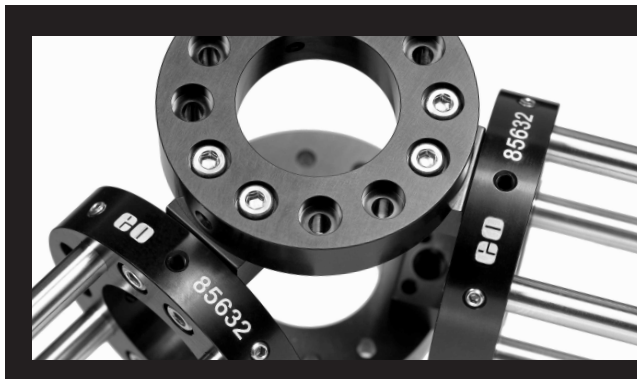
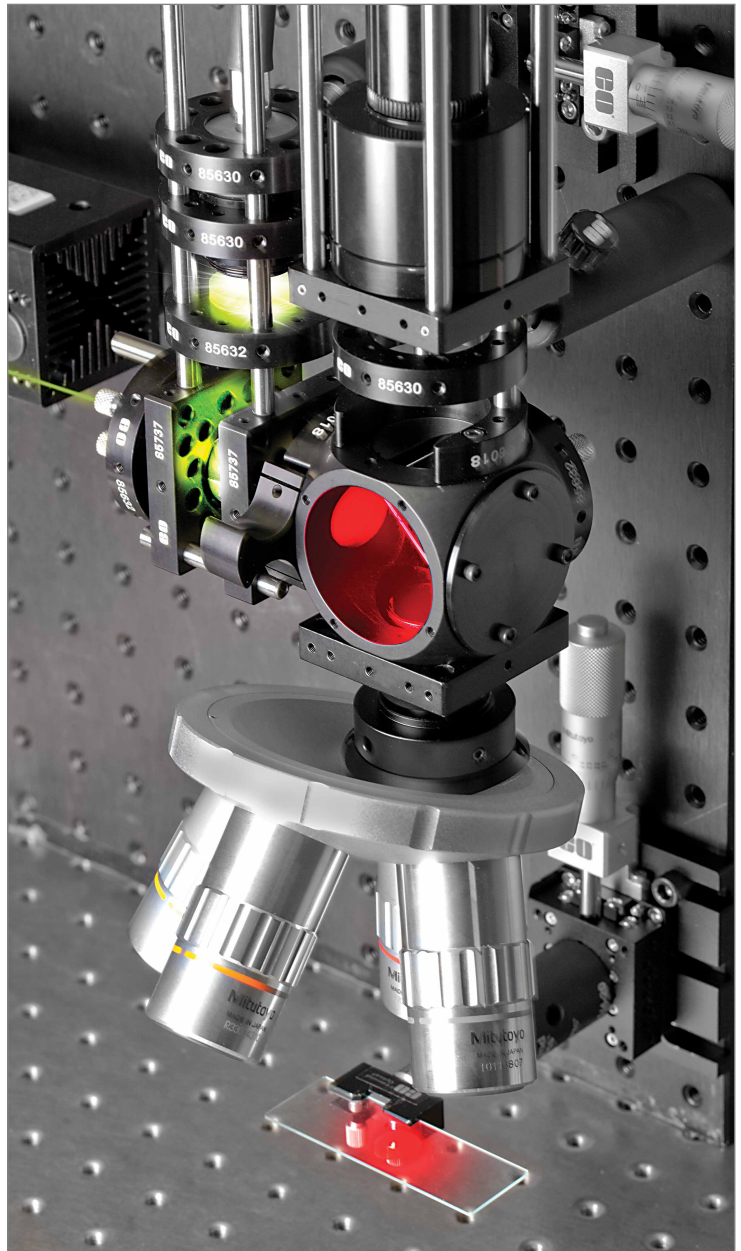
VISIT WWW.EDMUNDOPTICS.COM/CAGE-KITS FOR MORE WAYS TO START BUILDING TODAY!

WHY CHOOSE A TECHSPEC® CAGE SYSTEM?

- **STEP-BY-STEP BUILDING INSTRUCTIONS** for our most popular applications.
- **EO's EXPERT ENGINEERS** will help select the right combination of products for your application, saving you time and money.
- **VIDEOS, 3D MODELS, ASSEMBLIES** and more – we make integration easy!

TECHSPEC® CAGE SYSTEM FEATURES

- FLEXIBLE & MODULAR STRUCTURE
- DIVERSE COMPONENT OFFERING
- IDEAL FOR PROTOTYPING & EXPERIMENTATION
- HIGH PRECISION WITH EXCELLENT MECHANICAL STABILITY
- SUPERIOR PRICE-TO-PERFORMANCE RATIO
- LIMITLESS CUSTOMIZATION & ADAPTABILITY
- DURABLE AND PORTABLE DESIGN
- SUPPORTS MULTIPLE BEAM PATHS



GET STARTED TODAY WITH A COMPONENTS KIT

www.edmundoptics.com/cage-kits