

UNIVERSAL LASER SYSTEMS SERIES

LASER PROCESS HEADS • CRASH PROTECTION • ADJUSTABLE MOUNTS • BEAM EXPANDERS/COLLIMATORS • TRANSLATION MOUNTS
• KINEMATIC BEAM BENDERS • BEAM SWITCHING UNIT • KINEMATIC BEAM SPLITTER • BEAM SHUTTER/DIODE POINTER • BEAM
COMBINER/DIODE POINTER • SHUTTER INTERLOCK UNITS • POLARIZER HOUSINGS & WAVEPLATES • DELIVERY TUBES • LOCKING
RINGS • BEAM TUBES • ARTICULATED ARMS • COUPLERS • ACCESSORIES • BEZEL ADAPTERS • CO2 LASER NECESSITIES

www.haaslti.com
973-598-1150

UNIVERSAL LASER SYSTEMS

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19mm SERIES SYSTEM DIAGRAM

Low Power Laser Series

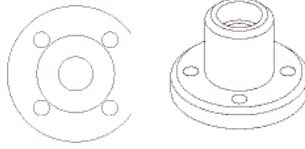
Beam Tubes



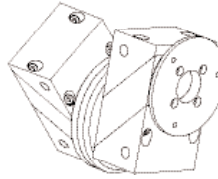
Targets/Optic Wrenches



Laser Bezel Adapters



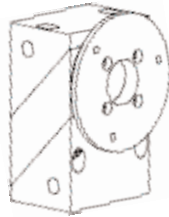
Beam Quality Enhancer



Safety Shutters



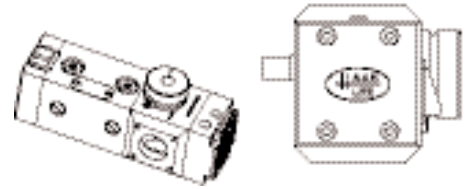
Circular Polarizers



Beam Expanders



Diode Pointers



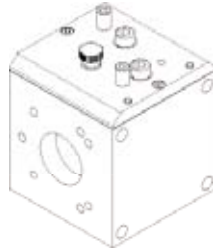
Linear Adjustable Mounts



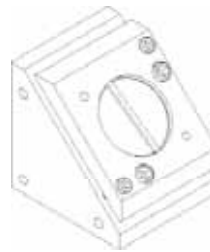
Crash Protection/Detection



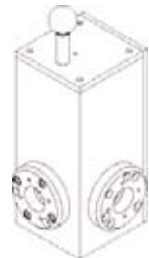
Beam Splitters



Beam Benders



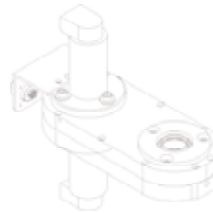
Beam Switches



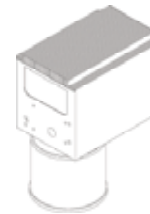
Laser Head



Trepan Heads



Scan Heads



Wrists



LASER PROCESS HEADS

PHA-19 SERIES

Low Power Laser Series

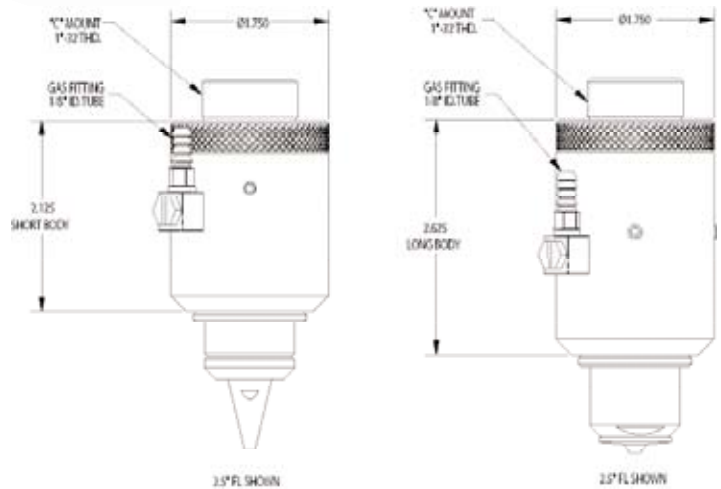
- Standard Focal Lengths
- Standard & Custom Mounting Available
- Gas Jet Manifold
- Anodized Aluminum Construction



PHA-19-089-LB shown.



Laser Process Heads provide a protective housing for the focus lens. Each process head is equipped with a nozzle tip standoff adjustment and X-Y focus lens adjustment. Male 1" -32 threads allow for easy mounting to other "19 Series" components. Internal gas jet manifold is included for introducing assist gas to the workpiece.

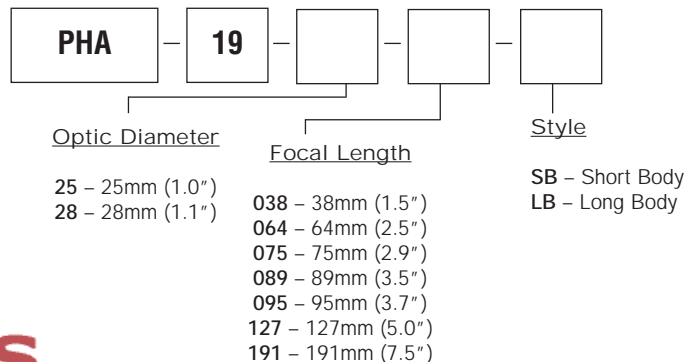


PHA-19 Specifications

- Standard Focal Lengths: 38mm, 50mm, 64mm, 75mm, 89mm, 95mm, 100mm, 127mm, 191mm (Custom Focal Lengths Available)
- 1" -32 Mounting Thread (C-Mount) Standard, Custom Mounting Available
- Assist Gas Pressure: 7 bar (100psi) max
- Optics: 1.0" and 1.1" Diameter Standard (Custom Diameters Available)
- Use with T-438 Series Tips
- Available for All Wavelengths
- Anodized Aluminum & Stainless Steel Construction
- 19mm Clear Aperture

Specifications subject to change without notice. Consult Haas Laser Technologies for Details.

Part Numbering Anatomy



MIRCROMACHINING LASER PROCESS HEAD ASSEMBLY (FOR CO₂ LASERS)

Low Power Laser Series

- **Fine Cut Laser Head Assembly**
- **Linear Adjustment Translation**
- **Monocular/CCD Viewing Options**
- **Quick Disconnect Mount**
- **Robust Industrial Design**

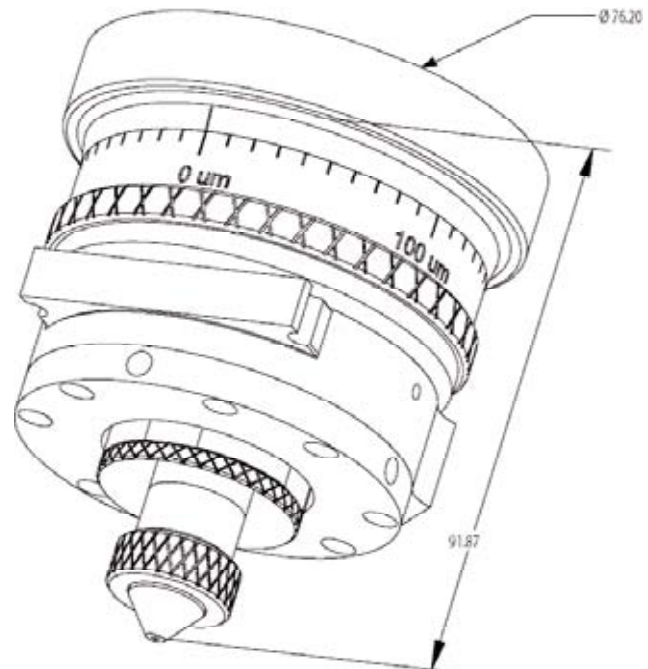


FCH-25-28-38-25-LA-38-QM Shown

The Micromaching Laser Process Head is designed for fine cutting and welding applications. The unit accepts a wide variety of both cutting and welding optics. The modular design permits custom configurations for specific applications. Ultra-fine pitch adjustments enable precise accurate set-ups. Robust industrial design.

Specifications

- 25mm C.A. Fine Cut Head Assembly
- ± 4 mm Focus Adjustment with 0.010mm Resolution
- ± 1.25 mm X-Y Nozzle Tip Adjustment with Fine Pitch Adjusters
- 38mm, 64mm, 89mm, 95mm, 127mm, 191mm, ZnSe Cover Glass Focus Lens Options
- 28mm Dia. (1.1") ZnSe AR Coated
- Gas Jet Manifold
- 0.5mm & 1.0mm Nozzle Tips
- Quick Change Process Head Mount
- Monocular/CCD Camera Viewing Head Assembly Options
- Anodized Aluminum, Stainless Steel, & Brass Construction
- Accessory Kit
- Optic Cleaning Kits Available



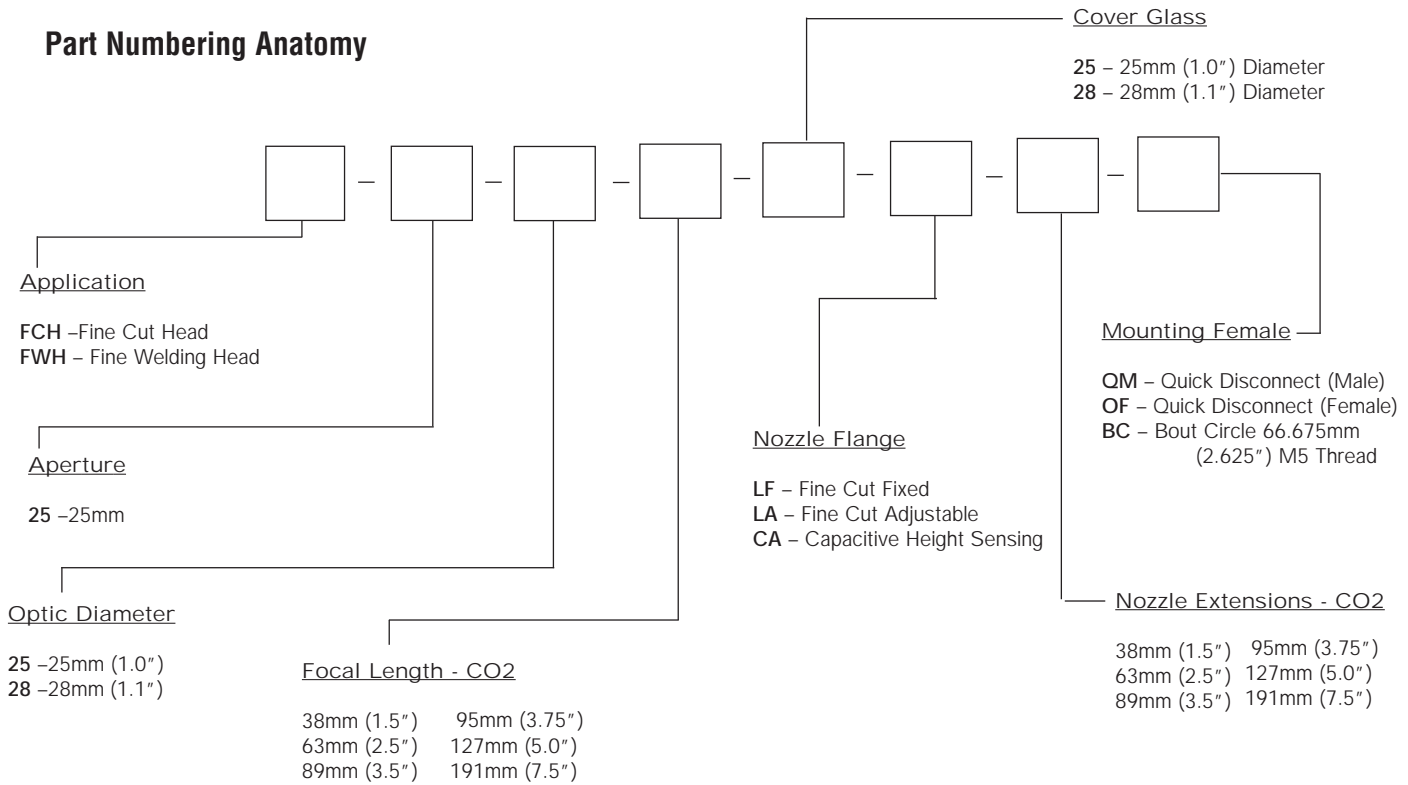
Specifications subject to change without notice.
Consult Haas Laser Technologies for Details.



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MODULE OPTIONS:

Part Numbering Anatomy



FOCUSING OPTICS CUTTING & WELDING

210CV-25030-038-ZS-DAR:	ZnSe CO2 Focus Lens 38mm (1.5") F.L x 25mm (1.0") Diameter	210CV-28030-095-ZS-DAR:	ZnSe CO2 Focus Lens 95mm (3.75") F.L x 28mm (1.1") Diameter
210CV-28020-063-ZS-SCO:	ZnSe CO2 Focus Lens 63mm (2.5") F.L x 28mm (1.1") Diameter	210CV-28040-127-ZS-SCO:	ZnSe CO2 Focus Lens 127mm (5.0") F.L x 28mm (1.1") Diameter
210CV-28040-89-ZS-DAR:	ZnSe CO2 Focus Lens 89mm (3.5") F.L x 28mm (1.1") Diameter	210CV-28030-191-ZS-SCO:	ZnSe CO2 Focus Lens 191mm (7.5") F.L x 28mm (1.1") Diameter

COVER GLASS

210CC-25010-XXX-ZS-DAR:	ZnSe CO2 Cover Glass 25mm (1.0") Diameter
210CC-28010-XXX-ZS-DAR:	ZnSe CO2 Cover Glass 28mm (1.1") Diameter

CUTTING:

T-512-020-H01:	0.5mm Nozzle Tip (Cutting)
T-512-040-H01:	1.0mm Nozzle Tip (Cutting)

NOZZLE TIPS

T-512-080-H01:	2.0mm Nozzle Tip (Welding)
T-512-120-H01:	3.0mm Nozzle Tip (Welding)
T-512-160-H01:	4.0mm Nozzle Tip (Welding)

WELDING:

NOZZLE EXTENSIONS

FCH-25-038-NE:	Nozzle Extension for 38mm (1.5") Focus Lens
FCH-25-063-NE:	Nozzle Extension for 63mm (2.5") Focus Lens
FCH-25-089-NE:	Nozzle Extension for 89mm (3.5") Focus Lens
FCH-25-095-NE:	Nozzle Extension for 95mm (3.75") Focus Lens
FCH-25-127-NE:	Nozzle Extension for 127mm (5.0") Focus Lens
FCH-25-191-NE:	Nozzle Extension for 191mm (7.5") Focus Lens

OPTIONS

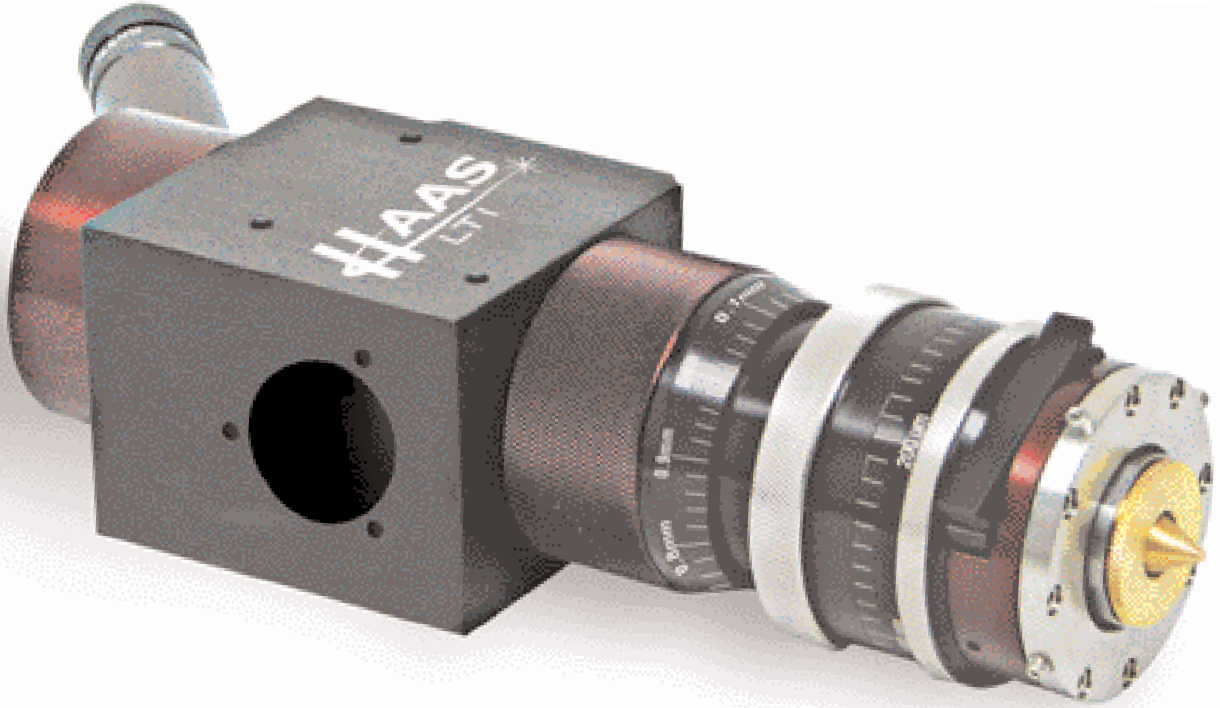
FCH-25-ACC-CO2:	Fine Cut Head Accessory Kit. Includes Optic Wrench, Target, & CO2 Alignment Paper.
OCK-50:	Optic Cleaning Kit

ACCESSORIES



MIRCROMACHINING LASER PROCESS HEAD ASSEMBLY (FOR CO₂ LASERS)

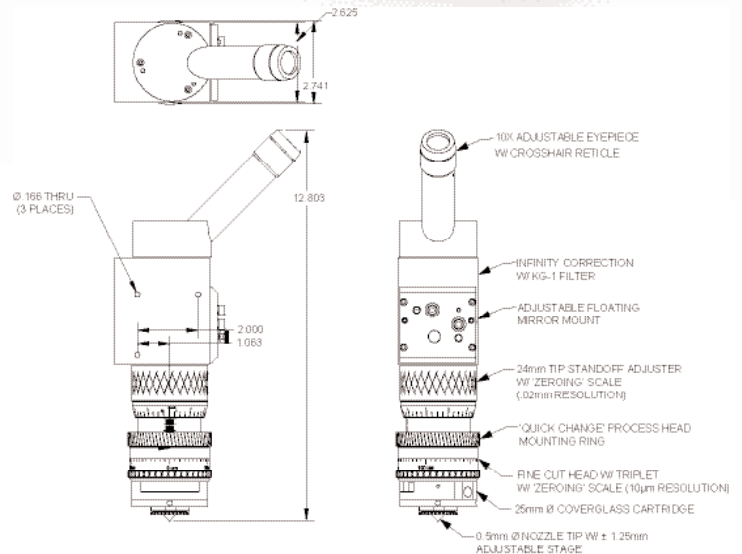
Low Power Laser Series



- Fine Cut Laser Head Assembly
- Diffraction Limited Optics
- Floating Beam Splitter Assembly
- Linear Adjustment Translation Mount
- Monocular/CCD Viewing Options
- Robust Industrial Design

Specifications

- 25mm C.A. Fine Cut Head Assembly
- ± 4 mm Focus Adjustment with 10 μ m Resolution
- ± 1.25 mm X-Y Nozzle Tip Adjustment with Fine Pitch Adjusters
- Linear Adjustable Translation Mount 24mm Travel
- 38mm, 64mm, 89mm, 95mm, 127mm, 191mm, ZnSe Cover Glass Focus Lens Options
- 28mm Diameter (1.1") ZnSe AR Coated Cover Glass
- Gas Jet Manifold
- 0.5mm & 1.0mm Nozzle Tips
- Quick Change Process Head Mount
- Monocular/CCD Camera Viewing Head Assembly Options
- Anodized Aluminum, Stainless Steel, & Brass Construction
- Accessory Kit
- Optic Cleaning Kits Available



ASSEMBLY SHOWN WITH THE FOLLOWING MODULES:

FCH-25-28-38-25-LA-OF-38
090YD-25XXX-050-GL-DVC
130YG-25032-XXX-FS-DYA
T-512-020-H01

LAM-25-25-VE
BSM-25-FCH-A
210YM-38064-X45-FS-DMR
MVH-25-10XA

The Micromachining Laser Process Head is designed for fine cutting and welding applications. The unit accepts a wide variety of both cutting and welding optics. The modular design permits custom configurations for specific applications. Ultra-fine Pitch adjustments enable precise accurate set-ups. Robust industrial design.

Specifications subject to change without notice.
Consult Haas Laser Technologies for Details.

MODULE OPTIONS:

CUTTING:

[FCH-25-28-38-25-LA-38-QM:](#)

25mm C.A. Fine Cut Head Assembly Provision for 38mm (1.5") F.L. Lens Assy. ± 4 mm Focus Adjustment with 10 μ m Resolution. ± 1.25 mm X-Y Nozzle Tip Adjustment with Fine Pitch Adjusters. Cover Glass Cartridge with Provision for 25mm Cover Glass. Gas Jet Manifold. Quick-Change Process Head Mount. Anodized Aluminum, Stainless Steel, & Brass Construction.

**See the Micromaching Laser Process Head Specification Sheet for Additional Options & Details.*

WELDING:

[FWH-25-28-38-25-LA-QM:](#)

25mm C.A. Fine Welding Head Assembly Provision for 38mm (1.5") F.L. Lens. ± 4 mm Focus Adjustment with 10 μ m Resolution. ± 1.25 mm XY Nozzle Tip Adjustment with Fine Pitch Adjusters. Cover Glass Cartridge with Provision for 25mm Cover Glass. Cover Gas Manifold. Quick-Change Process Head Mount. Anodized Aluminum, Stainless Steel, & Brass Construction.

CUTTING:

[210CV-25030-038-ZS-DAR:](#)

ZnSe CO2 Focus Lens 38mm (1.5")
F.L x 25mm (1.0") Diameter

[210CV-28020-063-ZS-SCO:](#)

ZnSe CO2 Focus Lens 63mm (2.5")
F.L x 28mm (1.1") Diameter

[210CV-28040-89-ZS-DAR:](#)

ZnSe CO2 Focus Lens 89mm (3.5")
F.L x 28mm (1.1") Diameter

FOCUSING OPTICS

[210CV-28030-095-ZS-DAR:](#)

ZnSe CO2 Focus Lens 95mm (3.75")
F.L x 28mm (1.1") Diameter

[210CV-28040-127-ZS-SCO:](#)

ZnSe CO2 Focus Lens 127mm (5.0")
F.L x 28mm (1.1") Diameter

[210CV-28030-191-ZS-SCO:](#)

ZnSe CO2 Focus Lens 191mm (7.5")
F.L x 28mm (1.1") Diameter

WELDING:

COVER GLASS

[210CC-25010-XXX-ZS-DAR:](#)

ZnSe CO2 Cover Glass 25mm (1.0") Diameter

[210CC-28010-XXX-ZS-DAR:](#)

ZnSe CO2 Cover Glass 28mm (1.1") Diameter

CUTTING:

[T-512-020-H01:](#)

0.5mm Nozzle Tip (Cutting)

[T-512-040-H01:](#)

1.0mm Nozzle Tip (Cutting)

NOZZLE TIPS

WELDING:

[T-512-080-H01:](#)

2.0mm Nozzle Tip (Welding)

[T-512-120-H01:](#)

3.0mm Nozzle Tip (Welding)

[T-512-160-H01:](#)

4.0mm Nozzle Tip (Welding)

LINEAR ADJUSTABLE MOUNT

[LAM-25-25-VE:](#)

Linear Adjustable Translation Mount. 24mm Travel. Rotary Barrel Adjustment w/ Zeroing Scale. 0.020mm Resolution. Aluminum, Stainless Steel & Brass Construction.

BEAM SPLITTER

[BSM-25-FCH-A:](#)

Floating Beam Splitter Assy. w/ Infinity Correction for Visible Viewing. Includes Adjustable Infinity Correction Optics & KG-1 Nd:YAG Filter. 1/4-80 Pitch Mirror Adjustment Screws with Hardened Steel Locating Pads. Provision for 1.5" Diameter Mirror. Accepts Visible Viewing Attachments, Fiber Collimator Inputs & Laser Process Head Assembly.

BEAM SPLITTER MIRROR

[210CM-38030-045-ZS-DCV:](#)

CO2/Visible ZnSe Mirror. 38mm (1.5") Diameter.

MONOCULAR

[MVH-25-10XA:](#)

Monocular Viewing Head Assembly w/ 10x Adjustable Eyepiece & Centering. Includes Crosshair.

POSITION VIEWING

[CVH-25-MNT:](#)

Camera Viewing Head Mount. Accepts Standard C-Mount CCD Camera.

[CAM-500:](#)

B&W CCD Camera w/ Power Supply

[MON-200:](#)

9" B&W Monitor

[XHR-200:](#)

X-Y Cross Hair

CCD

NOZZLE EXTENSIONS

[FCH-25-038-NE:](#)

Nozzle Extension for 38mm (1.5") Focus Lens

[FCH-25-063-NE:](#)

Nozzle Extension for 63mm (2.5") Focus Lens

[FCH-25-089-NE:](#)

Nozzle Extension for 89mm (3.5") Focus Lens

[FCH-25-095-NE:](#)

Nozzle Extension for 95mm (3.75") Focus Lens

[FCH-25-127-NE:](#)

Nozzle Extension for 127mm (5.0") Focus Lens

[FCH-25-191-NE:](#)

Nozzle Extension for 191mm (7.5") Focus Lens

OPTIONS

[FCH-25-ACC-CO2:](#)

Fine Cut Head Accessory Kit. Includes Optic Wrench, Target, & CO2 Alignment Paper.

[OCK-50:](#)

Optic Cleaning Kit

ACCESSORIES

Low Power Laser Series

CRASH DETECTION

CP-19 SERIES

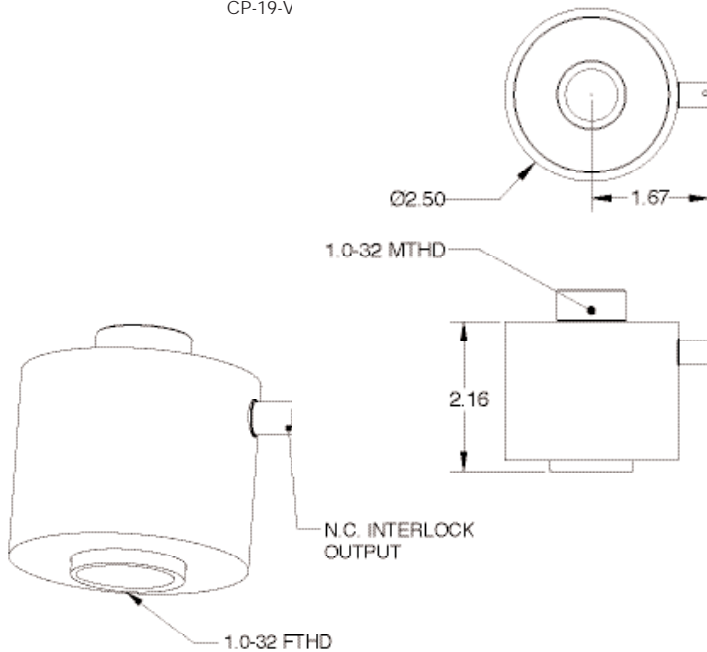
Low Power Laser Series



CP-19-V

- Provides Crash Detection
- Quick Disconnect Lemo® Connectors
- Sealed Design
- Anodized Aluminum Construction

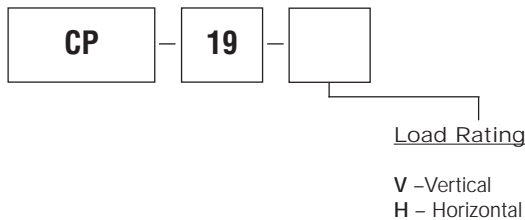
The CP-19 adds crash detection to our 19mm aperture components. Hardened steel balls and pads self locate after a crash. A quick disconnect Lemo® electrical connector provides easy integration. Crash reporting is accomplished via three (3) series wired internal switches. The sealed design and anodized aluminum construction are perfect for industrial applications.



CP-19 Specifications

- Provides X, Y, & Z Axis Crash Protection
- 4mm Z-Axis Travel
- Shelf Resetting
- Hardened Steel Locating Pads
- Switches Rated at 3A @ 125 VAC
- Lemo® Socket and Jack Provided
- Vertical and Horizontal Configurations
- 1" -32 Mounting Thread (C-Mount)
- Sealed Design
- Small Package
- Anodized Aluminum Construction
- 19mm Clear Aperture

Part Numbering Anatomy



Specifications subject to change without notice.
Consult Haas Laser Technologies for Details.



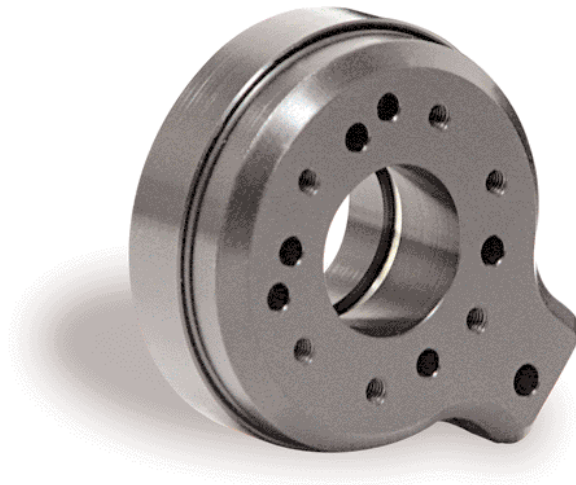
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MAGNETIC BREAKAWAY

CB-19 SERIES

- Provides Breakaway Protection
- Sealed Design
- Anodized Aluminum Construction

The CB-19 adds crash protection to our 19mm aperture components. Self locates after a crash. Crash reporting is accomplished via internal proximity switches. The sealed design and anodized aluminum construction are perfect for industrial applications.



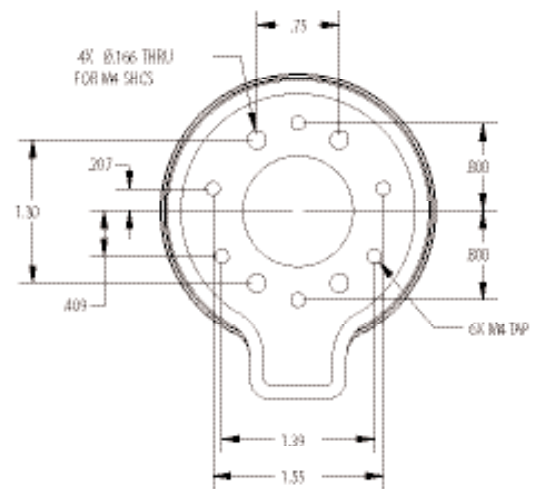
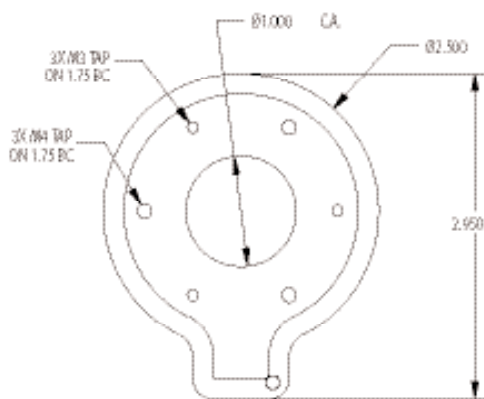
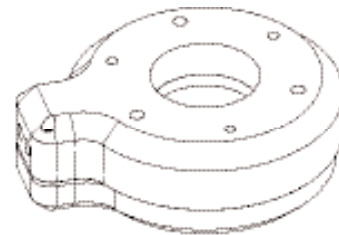
CB-19 Shown Above.

Low Power Laser Series

CB-19 Specifications

- Provides X, Y Axis Crash Protection
- Shelf Resetting
- Hardened Steel Locating Pads
- Sealed Design
- Small Package
- Anodized Aluminum Construction
- 19mm Clear Aperture

Part Numbering Anatomy



Specifications subject to change without notice.
Consult Haas Laser Technologies for Details.

LINEAR ADJUSTABLE MOUNTS

LAM-19 SERIES

Low Power Laser Series

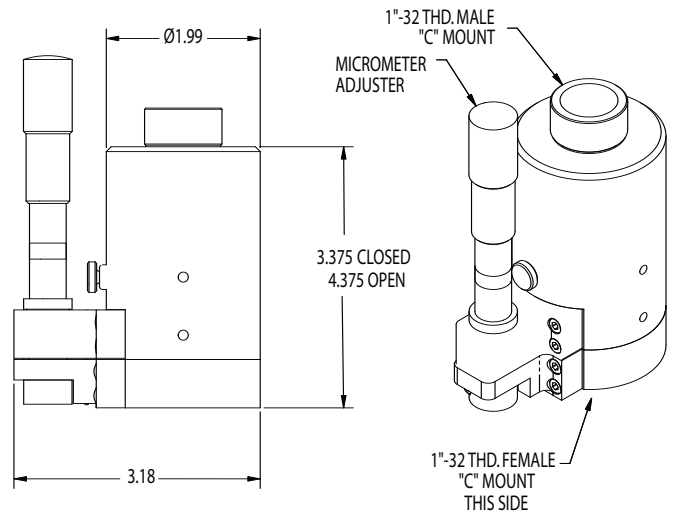


LAM-19-25-VE Shown Above.

Linear Adjustable Mounts are typically attached to a process head for fine adjustment of the laser focus spot relative to the workpiece. Each LAM-19 has a clear aperture of 19mm with female 1"-32 threads on top, and male 1"-32 threads on the bottom. It easily connects in line with other "19mm Series" components.

A sealed design prevents contaminants from entering the beam path. The micrometer allows for precision linear adjustments. The standard 25mm stroke design allows for retraction of lower mount under compressive loads. This mount also incorporates a linear crash protection.

- Sealed Design
- Adjustable Slide Tension
- Choice of Micrometer Style
- Anodized Aluminum Construction



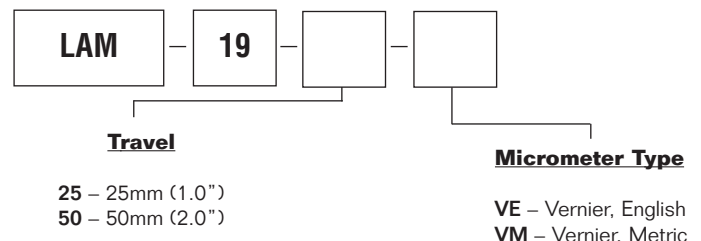
Basic Dimensions

Part#	Length	Weight
LAM-19-25-VE	86-111mm	525g
LAM-19-50-VE	111-161mm	655g

LAM-19 Specifications

- .001" (.025mm) Adjustment Accuracy
- 1"-32 Mounting Thread (C-mount)
- Choice of Micrometer Style
- Adjustable Slide Mount
- Can be used Horizontally
- Retraction Under Compressive Loads
- Z-axis Crash Protection
- Sealed Design
- Anodized Aluminum Construction
- 19mm Clear Aperture

Part Numbering Anatomy

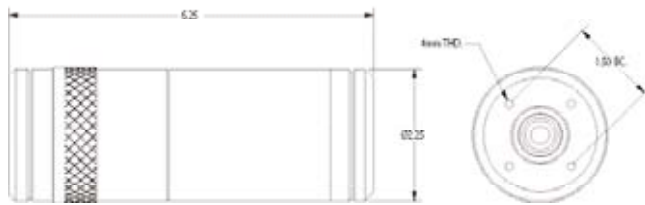
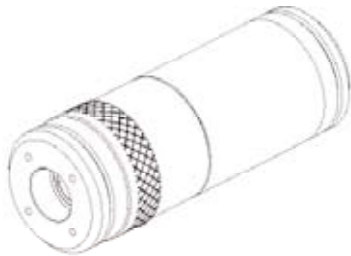


Specifications subject to change without notice. Consult Haas Laser Technologies for Details.

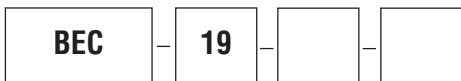
INDUSTRIAL BEAM EXPANDER/COLLIMATOR BEC-19 SERIES

- Sealed Design
- Custom Expansion Ratios
- Galilean Design
- Easily Removable Optics

Beam expanders/collimators can be used to either expand or reduce the laser beam diameter. The BEC-19 has a sealed design with easily removable optics. The adjustment ring allows for precise control of beam divergence, without rotating the optic or changing the overall length of the expander.



Part Numbering Anatomy



Expansion

- 1.5 – 1.5x
- 2.0 – 2.0x
- 2.5 – 2.5x
- 3.0 – 3.0x
- 3.5 – 3.5x
- 4.0 – 4.0x
- 5.0 – 5.0x
- 6.0 – 6.0x

Wavelength

- 10.6 – CO₂ (10.6µm)
- 1064 – Nd:YAG (1064nm)
- 532 – Green (532nm)
- 355 – UV (355nm)



BEC-19-2.0-10.6 Shown.

Low Power Laser Series

BEC-19 Specifications

- Machined from Aluminum, Brass, and Stainless Steel
- Fixed Overall Length for Easy Mounting
- Sealed Design
- Galilean Telescope Design Insures Minimum Aberration
- Easily Removable Optics for Cleaning and Expansion Changes
- 1" -32 Mounting Thread, for Best Results Order with TM-19
- Available for All Wavelengths
- Optics are AR Coated for Specific Wavelength
- Custom Expansion Ratios
- Max. Output Aperture (Positive Expander) – 23mm

Standard CO₂ Expanders:

Expansion	Max. Input Aperture	Exit Aperture
1.5	.10mm	.23mm
2.0	.12mm	.23mm
2.5	.9.0mm	.23mm
3.5	.6.5mm	.23mm
4.0	.5.5mm	.23mm
5.0	.4.5mm	.23mm

Specifications subject to change without notice. Consult Haas Laser Technologies for Details.



TRANSLATION MOUNT FOR BEAM EXPANDER/COLLIMATOR

TM-19 SERIES

Low Power Laser Series



TM-19-S-C Shown with
BEC-19 Series Collimator

- Supplied in Pairs
- Various Mounting Styles Available
- Sealed Design
- Quick Connect Self-Aligning Joint

TM-19 Specifications

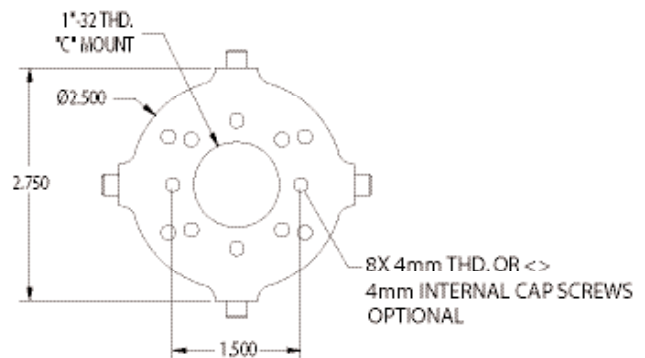
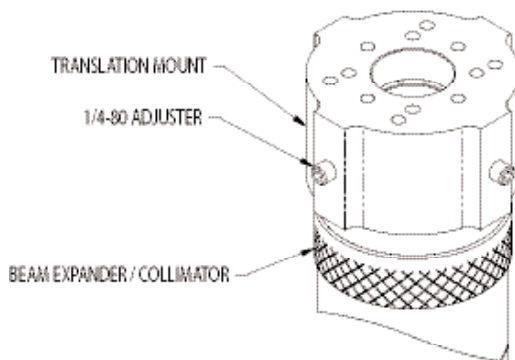
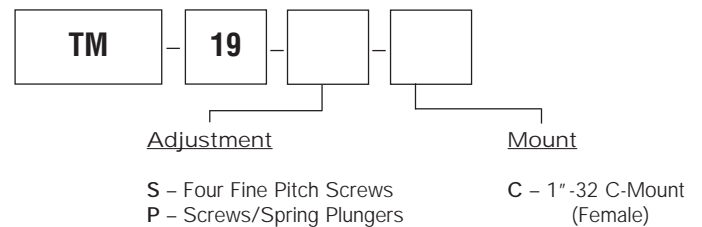
- Machined From Stainless Steel & Anodized Aluminum
- Sealed Design
- Quick Connect Self-Aligning Joint
- 1/4" -80 Pitch Adjustment Screws
- ±2mm Adjustment Range
- Standard 1" -32 Mounting Thread
- 19mm Clear Aperture

Translation Mounts are designed for the critical alignment of transmissive optics, such as placing a beam collimator within a pre-existing beam path.

When two mounts are used on each end of a component, translational and angular corrections can be made. The internal, sealed stage is adjusted via four ultra fine 1/4" -80 pitch screws within a ±2mm range. A self-aligning joint allows for the placement and removal of a component without affecting the beam path.

Various mounting styles are available. Call us today or visit us online at www.haaslti.com for details.

Part Numbering Anatomy



TRANSLATION MOUNT WITH QUICK-CONNECT TA-19 SERIES

- **Sealed Design**
- **Quick Connect Self-Aligning Joint**
- **Various Mounting Styles Available**
- **Designed for Critical Alignment of Transmissive Optics**

Translation Mounts are designed for the critical alignment of transmissive optics, such as placing beam collimator within a pre-existing beam path. When two mounts are used on each end of a component, translational and angular corrections can be made. The internal, sealed stage is adjusted via four ultra fine pitch screws and spring plungers, within a $\pm 2\text{mm}$ range. A self-aligning joint allows for the placement and removal of a component without affecting the beam path.

Various mounting styles available. Contact Haas Laser Technologies today for details at 973-598-1150 or visit us online at www.haaslti.com.

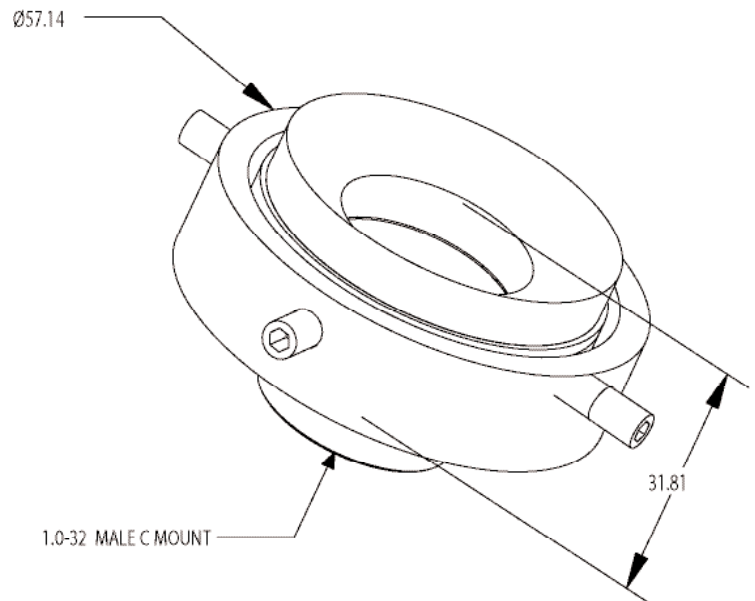


TA-19-S-C Shown.

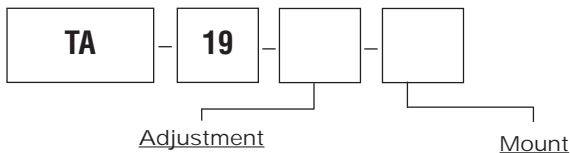
Low Power Laser Series

TA-19 Specifications

- Machined From Stainless Steel, UHMW & Anodized Aluminum
- Sealed Design
- Quick Connect Self-Aligning Joint
- 3/16" -100 Pitch Adjustment Screws
- $\pm 2\text{mm}$ Adjustment Range
- Standard 1" -32 Mounting Thread
- 19mm Clear Aperture



Part Numbering Anatomy



S – Four Fine Pitch Screws
P – Screws/Spring Plungers

C – 1" -32 C-Mount
(Female)

Specifications subject to change without notice.
Consult Haas Laser Technologies for Details.

BEAM QUALITY ENHANCEMENT SYSTEM BQE-25 SERIES

Low Power Laser Series



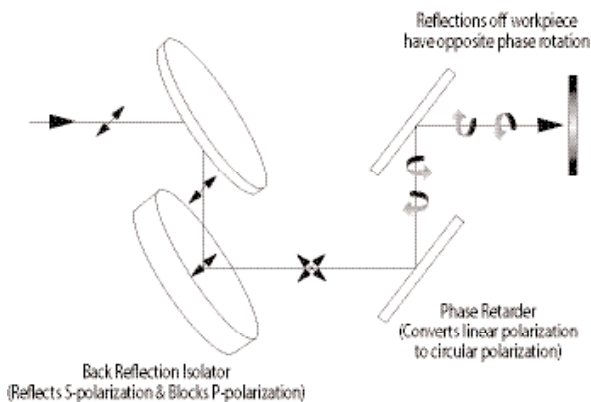
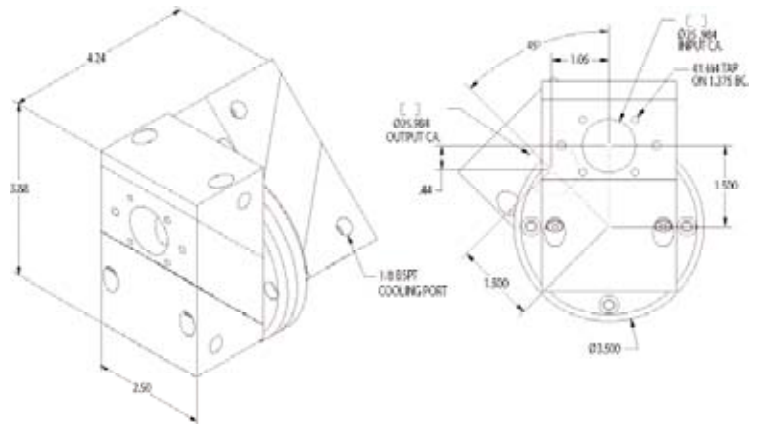
BQE-25 Shown.

- Prevents Back Reflections
- Converts Laser Beam from Linearly Polarized to Circularly Polarized
- Mounts for any Input/Output Configuration

The Beam Quality Enhancement System is designed to prevent back reflections from the laser process from re-entering the laser cavity. The system preserves the laser's intra-cavity conditions, mode quality, and power stability. In addition, the laser beam is converted from a linearly polarized beam to a circularly polarized beam.

BQE-25 Specifications

- Designed for CO2 Lasers (10.6 μ m)
- All Mirrors Included
- Offset Mirrors Can be Rotated to "Fresh" Surface for Small Beam Sizes
- Liquid Cooled Mirrors - 1/8 BSPT Fittings
- Anodized Aluminum Construction
- 25mm Clear Aperture
- Mounts for any Input/Output Configuration



Replacement Mirrors

- (1) Phase Retarder 21OCM-5105-P45-SI-EAU
- (2) Mirror 21OCM-5105-045-SI-EAU
- (1) Back Reflection Isolator . 17OCM-50100-I45-CU-POL

Part Numbering Anatomy



Specifications subject to change without notice. Consult Haas Laser Technologies for Details.

CIRCULAR POLARIZER SYSTEM

CPU-25 SERIES

- **Converts Laser Beam from Linearly Polarized to Circularly Polarized**
- **Mounts for any Input/Output Configuration**

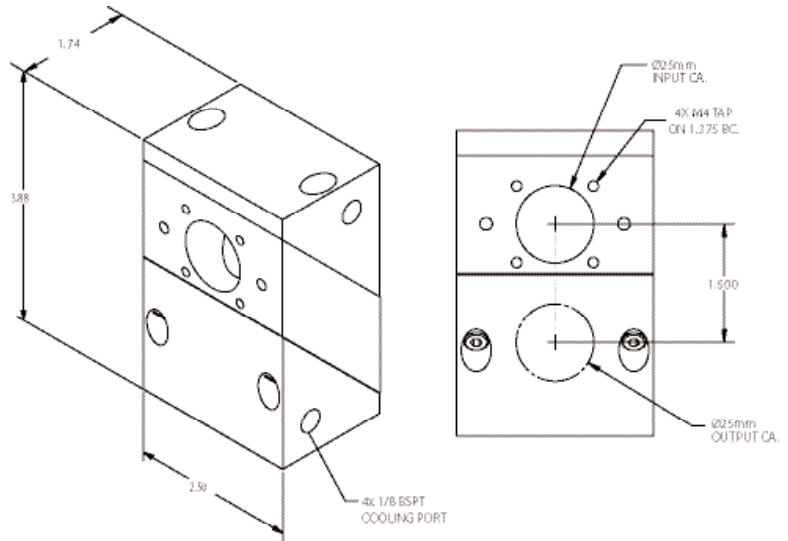
The Beam Circular Polarizer System is designed to convert the laser beam from a linearly polarized beam to a circularly polarized beam.



Low Power Laser Series

CPU-25 Specifications

- Designed for CO₂ Lasers (10.6μm)
- All Mirrors Included
- Offset Mirrors Can be Rotated to "Fresh" Surface for Small Beam Sizes
- Liquid Cooled Mirrors - 1/8 BSPT Fittings
- Anodized Aluminum Construction
- 25mm Clear Aperture
- Mounts for any Input/Output Configuration



Contact Haas Laser Technologies for proper mounting applications.

Replacement Mirrors

- (1) Phase Retarder** 21OCM-5105-P45-SI-EAU
- (1) Mirror** 21OCM-5105-045-SI-EAU

Part Numbering Anatomy



KINEMATIC BEAM BENDERS

BBK-19 SERIES

- 90° Beam Displacement
- Independent Angular Orthogonal Mirror Correction
- Easy Optic Removal/Replacement

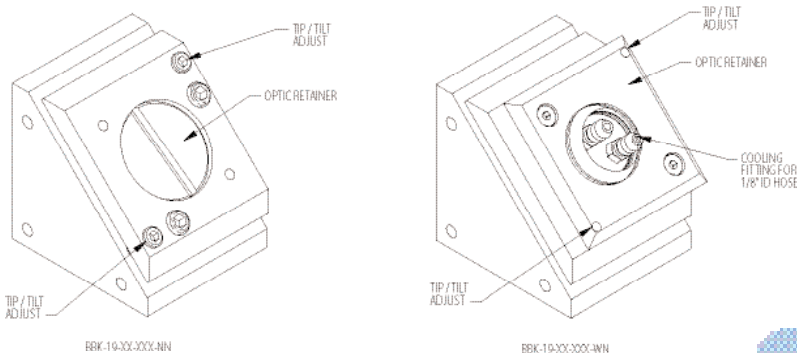
Low Power Laser Series



BBK-19-030-NN Shown.

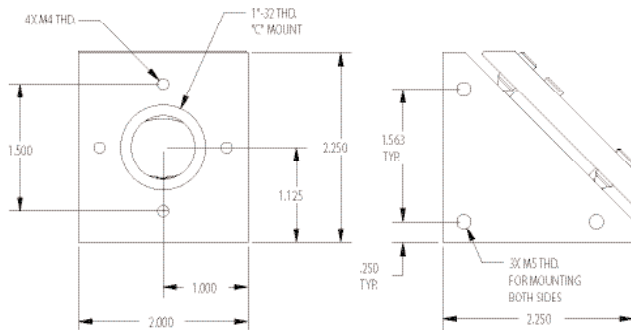
The BBK-19 series kinematic laser beam benders provide a ninety-degree beam displacement with a 19mm clear aperture.

Independent angular orthogonal mirror correction with eighty pitch adjustment screws provides precise, repeatable alignment. Optic removal and replacement can be accomplished without affecting alignment. Several mirror diameters and thicknesses can be accommodated. Both mounting faces have 1" -32 female threads.



BBK-19-XX-XXX-NN

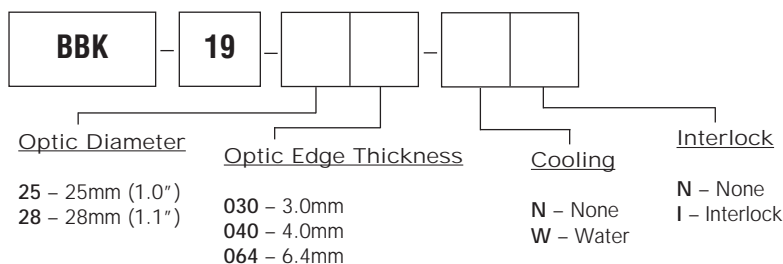
BBK-19-XX-XXX-NN



BBK-19 Specifications

- $\pm 2^\circ$ Independent Orthogonal Mirror Adjustment
- 80 Pitch Adjustment Screws
- Accommodates 25mm & 28mm Diameter Mirrors (other diameters available)
- 1" -32 Mounting Thread (C-Mount)
- Face and Side Mounting Holes
- Available for All Wavelengths
- Sealed Design
- Anodized Aluminum Construction
- 19mm Clear Aperture

Part Numbering Anatomy



Specifications subject to change without notice. Consult Haas Laser Technologies for Details.



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SAFETY SHUTTER WITH DIODE POINTER

SSDP-19 SERIES

- **Fail Safe Design**
- **500W Power Handling Capability**
- **Available in Many Configurations**

The SSDP-19 Safety Shutters are fail-safe shutters designed to handle up to 500W. Gold plated liquid cooled reflecting shutter blade design.

The blade is designed for fail-safe operation and is closed when power is off. When the shutter is closed, the laser beam is reflected off the shutter blade into the water-cooled beam dump. The replaceable beam dump surface can be ordered in several styles. Both mounting faces have 1" -32 female threads. The diode pointer option utilizes a 650nm diode laser with 1/4" -80 pitch adjustment screws. An independent, isolated mirror injects the diode pointing laser into the beam path when the shutter is closed.

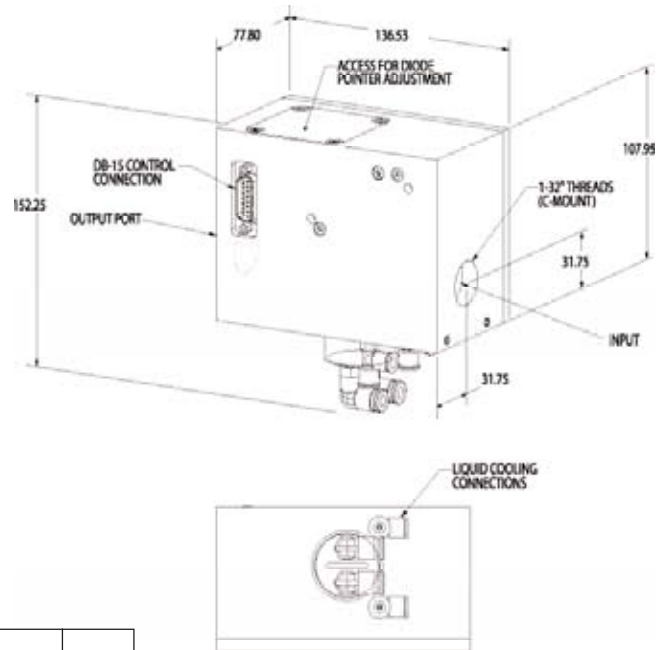


Low Power Laser Series

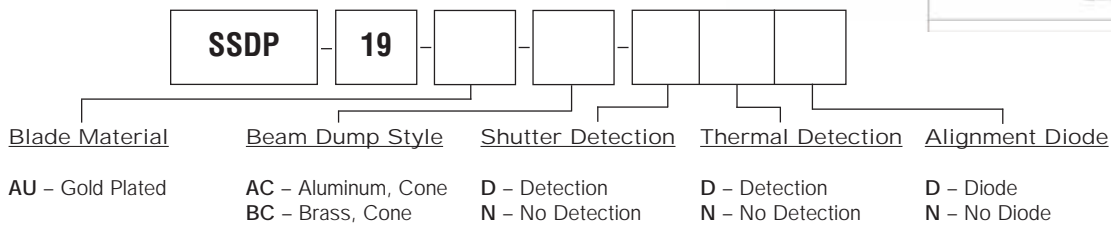
SSDP-19-AU-BC-DDD Shown.

SSDP-19 Specifications

- 24VDC
- 35ms Maximum Response
- Standard Gold Plated Blade
- Optional Shutter Open Detection
- Optional Thermal Detection
- Liquid Cooled (50PSI Max)
- Replaceable Beam Dump Surface
- 1" -32 Mounting Thread (C-Mount)
- Optional Alignment Diode
- DB15 Connection for I/O
- Anodized Aluminum Construction
- 19mm Clear Aperture
- For use with SIU-100 Shutter Interlock Unit



Part Numbering Anatomy



SHUTTER INTERLOCK UNIT

SIU-100 SERIES

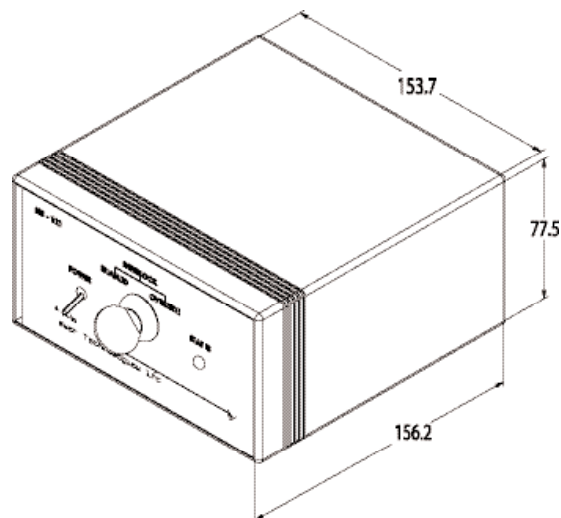
Low Power Laser Series



SIU-100-120 Shown.

- High Peak Power
- Removable Keyswitch
- DB-9 External Interface
- Bi-Color Status LED

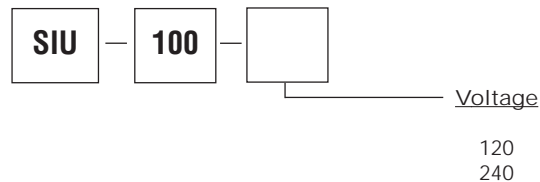
The SIU-100 Shutter Interlock Unit provides the source of electrical power to open and close Haas LTI shutters. The high peak power circuitry is designed to deliver the shortest open/close times. The unit provides safety interlock circuitry for enclosure doors, panels, beam delivery, etc...



SIU-100 Specifications

- Provides the Electronic Circuitry Needed for Rotary Solenoid Shutters
- Provides High Peak Power at Beginning of Rotary Stroke and Then Reduces the Wattage to Hold the Solenoid in the Energized Position for 100% Duty Cycle Operation
- Power On Switch
- Removable Keyswitch (enabled only) for Interlock Override
- Shutter Status Bicolor LED, Red (closed)/Green (open)
- 120/240 VAC
- DB-9 External Interface Connection
- For use with Haas LTI 24VDC Shutters

Part Numbering Anatomy



Visit us online for application ideas and downloads!
www.haaslti.com

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LASER BEAM DUMP

BD-19 SERIES

- **500W Power Handling Capability**
- **Air & Water Cooled Design**



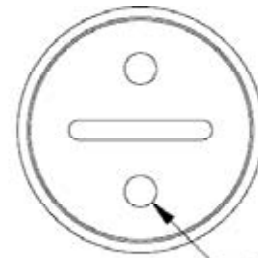
BD-19-B-W Shown.

Low Power Laser Series

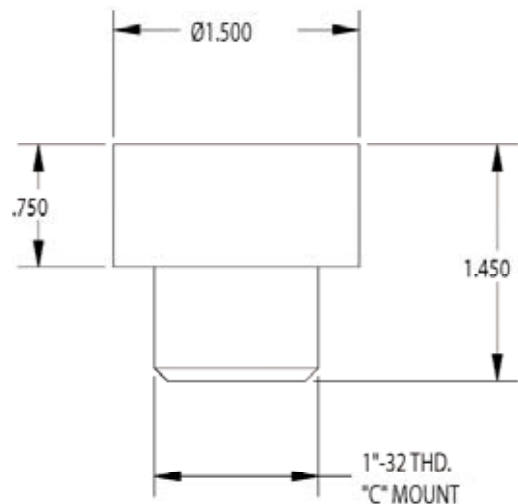
The BD-19 Laser Beam Dump provides a method to terminate a laser beam. Air and water cooled versions are available. Internal cone geometry diffuses laser beam.

BD-19 Series Specifications

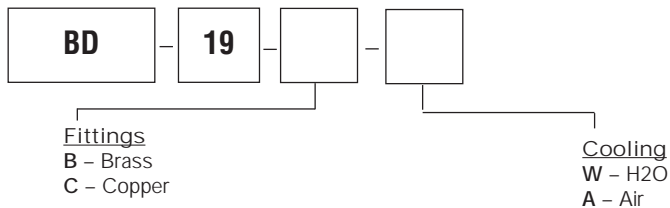
- Water or Air Cooled
- 500W Capacity. Water /500W - Air/ 100W
- Internal Cone Diffuser
- Liquid Cooled (80 PSI Max)
- #10-32 Tap (Recommend 6mm or 1/4" tube fittings)



2X #10-32 TAP FOR COOLING FITTINGS



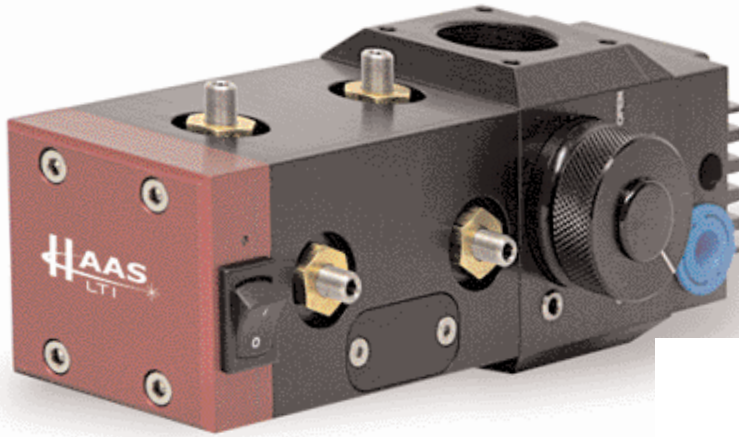
Part Numbering Anatomy



BEAM SHUTTER/DIODE POINTER

BSDP-19 SERIES

Low Power Laser Series

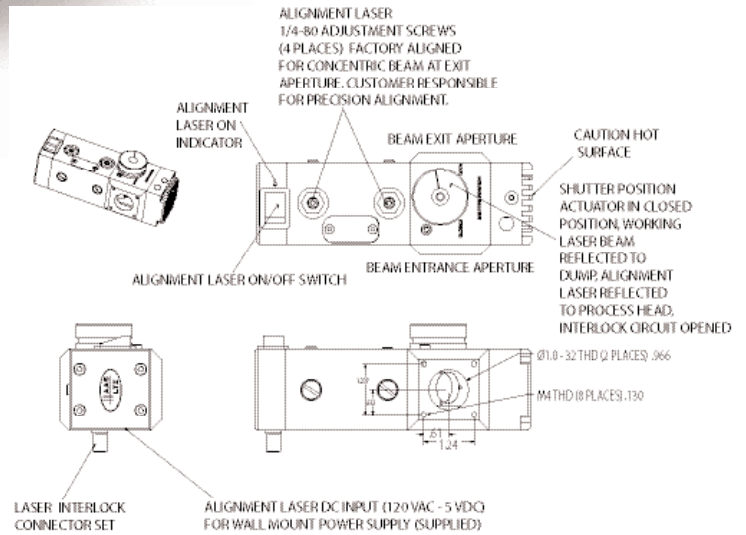


BSDP-19-AU-AF-10.6-NNM Shown.

- Mirror Repeatability
- Water Cooled Beam Dump
- Available for Multiple Wavelengths

The Beam Shutter/Diode Pointer has an integrated laser beam alignment diode with a manual shutter blade and water cooled beam dump. Four independent fine-pitched adjustment screws permit precise control of the diode alignment. Positive spring pressure and hardened balls and pads ensure mirror repeatability.

The Diode Laser Module Assembly can be ordered separately (DLM-650-2MW)

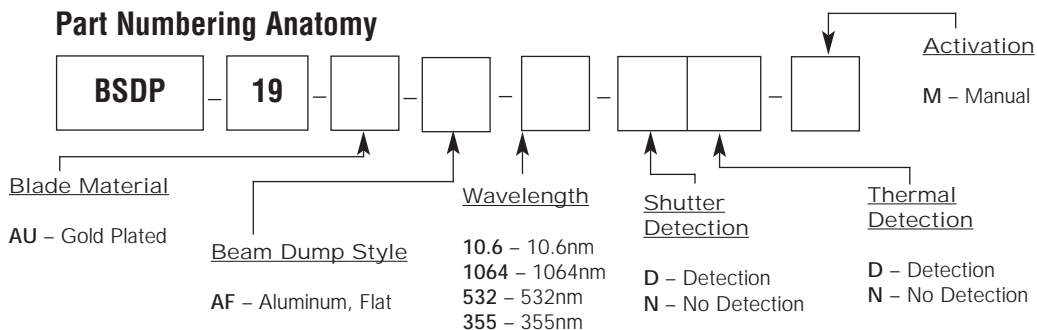


BSDP-19 Specifications

- 650nm, 2mW Laser Diode
- Laser Diode ON/OFF Switch
- Laser Diode On Indicator Light
- 1/4" -80 Pitch Adjustment Screws
- Interlocked Shutter Blade, Includes Plug and Receptacle
- Available in Multiple Wavelengths
- Water Cooled Beam Dump
- 1" -32 Mounting Threads
- Anodized Aluminum Construction
- 19mm Clear Aperture
- Includes 120V AC Power Supply



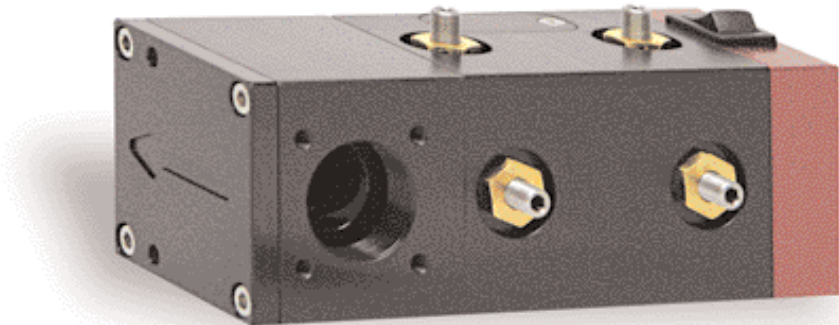
Part Numbering Anatomy



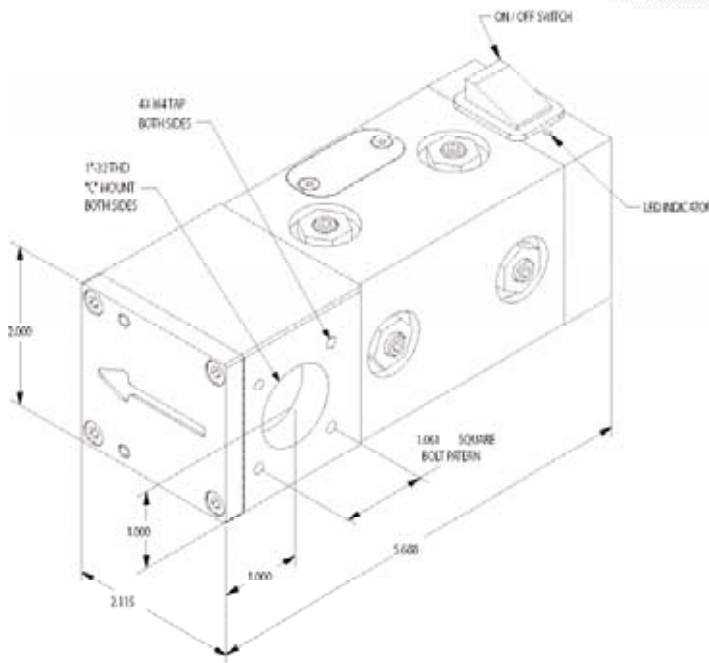
BEAM COMBINER/DIODE POINTER

BCDP-19 SERIES

- **Precise Control of Diode Alignment**
- **Low Loss**
- **Minimum Beam Displacement**



Low Power Laser Series



BCDP-19-10.6 Shown

The Beam Combiner/Diode Pointer has an integrated laser beam alignment diode and beam combining optic. The output combines the laser beam with the diode pointer beam. Four independent fine-pitched adjustment screws permit precise control of the diode alignment without affecting the main beam. The combining optic is AR coated with a thin edge thickness for low loss and minimum beam displacement.

BCDP-19 Specifications

- 650nm, 2mW Laser Diode
- Laser Diode ON/OFF Switch
- Laser Diode ON Indicator Light
- 1/4" -80 Pitch Adjustment Screws
- Available in Multiple Wavelengths
- 1" -32 Mounting Threads
- Anodized Aluminum Construction
- 19mm Clear Aperture
- Less than 1mm Beam Displacement
- Includes 120V AC Power Supply

Part Numbering Anatomy



Wavelength

- 10.6 – CO₂ (10.6µm up to 50W)
- 1064 – Nd:YAG (1064nm)
- 532 – Green (532nm)
- 355 – UV (355nm)

BEAM SWITCHING UNIT

BSU-19 SERIES

Low Power Laser Series



BSU-19-28030-MNNL Shown

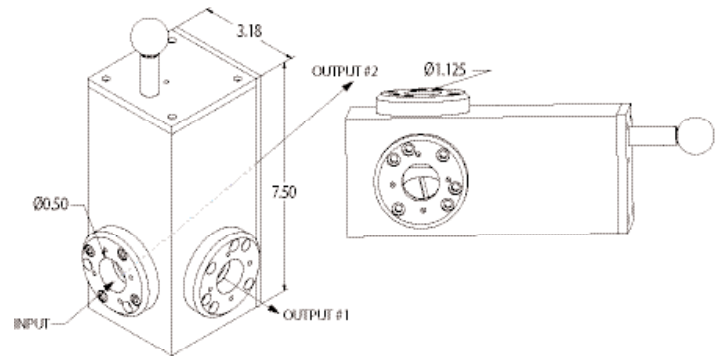
- **Precise, Repeatable Alignment**
- **Water Cooling & Interlock Options**
- **Easy Optical Replacement and Removal**
- **Several Configurations Available**

The Beam Switching Unit contains an internal BBK-19 Beam Bender mounted on precision linear bearings and can be translated in and out of the beam path. The kinematic laser beam bender provides a ninety-degree beam displacement with a 19mm clear aperture. Independent angular orthogonal mirror correction with eighty pitch adjustment screws provides precise, repeatable alignment. The BSU-19 provides a method to "Time-Share" or redirect the laser beam.

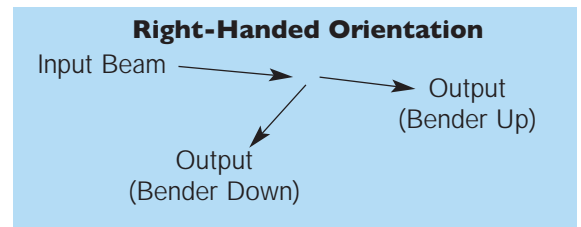
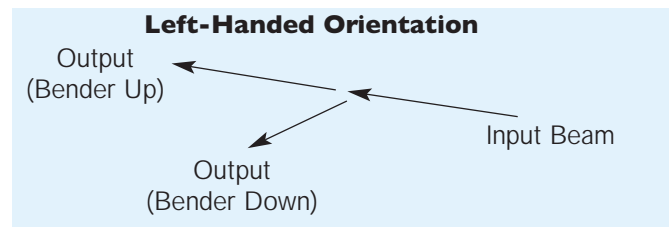
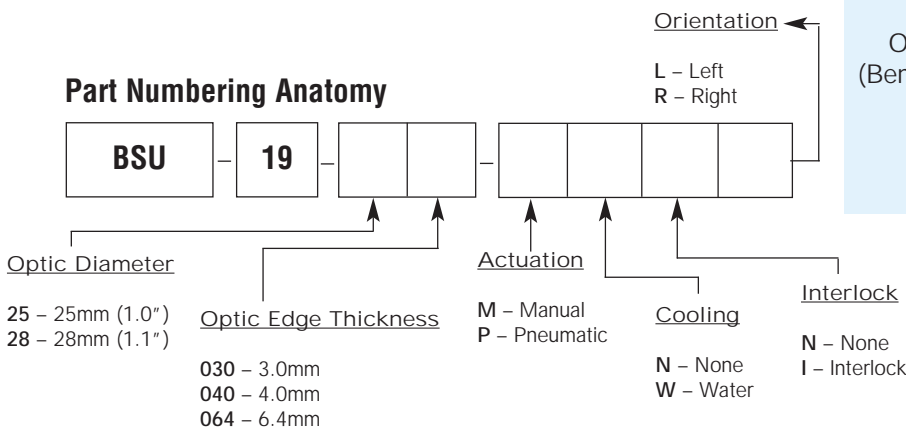
Optic removal and replacement can be accomplished without affecting alignment. Several mirror diameters and thickness can be accommodated.

BSU-19 Specifications

- Pneumatic or Manual Configuration
- $\pm 2^\circ$ Independent Orthogonal Mirror Adjustment
- 80 Pitch Adjustment Screws
- Accommodates 25mm & 28mm Diameter Mirrors (Other Diameters Available)
- Available Interlock Output
- 1" -32 Mounting Thread (C-Mount)
- Available for All Wavelengths
- Anodized Aluminum Construction
- 19mm Clear Aperture



Part Numbering Anatomy



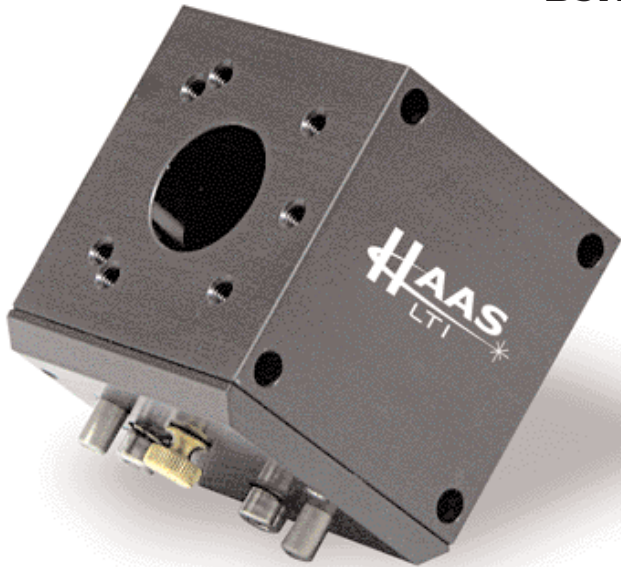
Specifications subject to change without notice. Consult Haas Laser Technologies for Details.



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KINEMATIC BEAM SPLITTER

BSK-19 SERIES

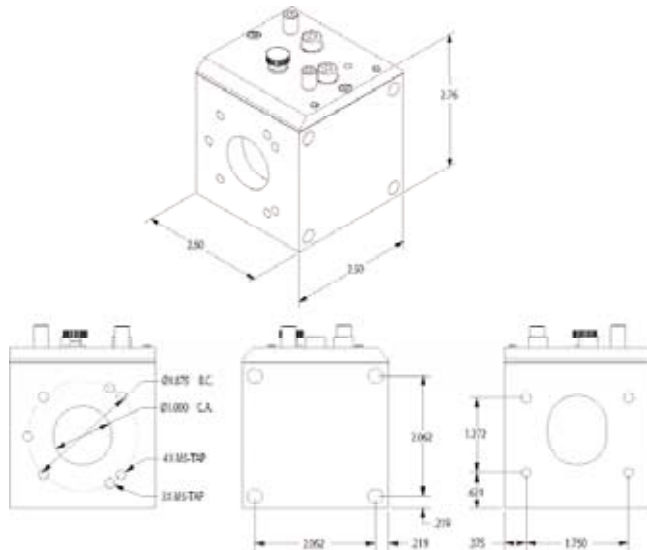


BSK-19-25040-NN Shown

- Face and Side Mounting Holes
- Sealed Design
- 90° Angular Beam Displacement
- Precise, Repeatable Alignment

The BSK-19 series kinematic laser beam splitters provide a ninety-degree angular beam displacement of reflected beam with minimal lateral beam displacement of transmitted beams (lateral displacement is determined by optic thickness). Several laser beam split options are also available.

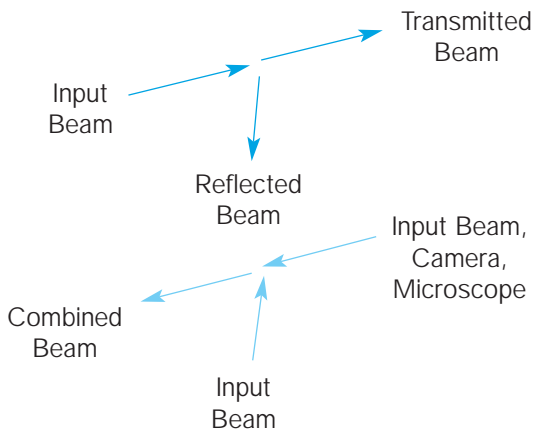
Independent angular orthogonal mirror correction with eighty pitch adjustment screws provides precise, repeatable alignment. Optic removal and replacement can be accomplished without affecting alignment. Several mirror diameters and thickness can be accommodated.



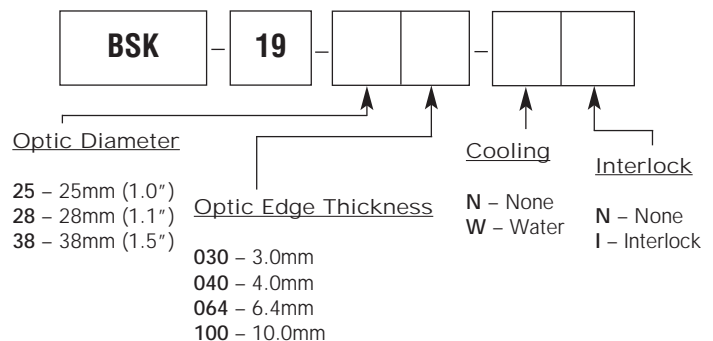
Low Power Laser Series

BSK-19 Specifications

- $\pm 2^\circ$ Independent Orthogonal Mirror Adjustment
- 80 Pitch Adjustment Screws
- Accommodates Standard 38mm Diameter Mirror (Other Diameters Available)
- Face and Side Mounting Holes
- Available for all Wavelengths
- Sealed Design
- Anodized Aluminum Construction
- 19mm Clear Aperture
- Order with ADP-CMNT-25BLT to Connect to 19mm Series Components



Part Numbering Anatomy



Specifications subject to change without notice. Consult Haas Laser Technologies for Details.



INDUSTRIAL ARTICULATED ARM

ARM-19 SERIES

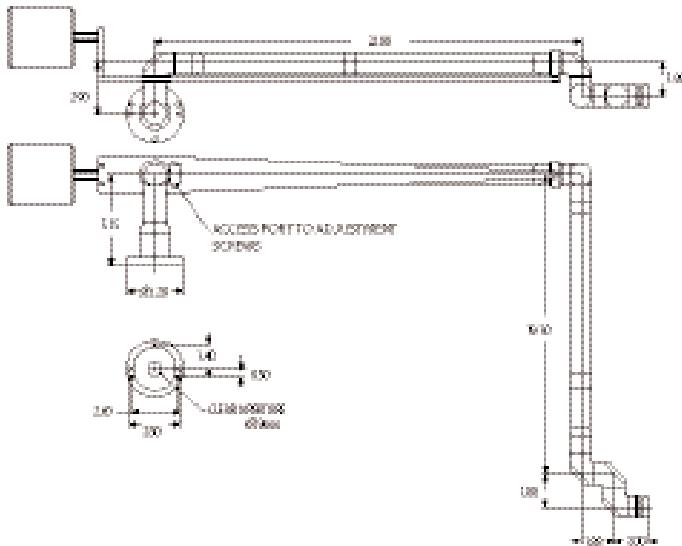
Low Power Laser Series



ARM-19-558-490-10.6WS Shown

- Sealed Beam Delivery
- Higher Accuracy Design
- Custom Configurations Available

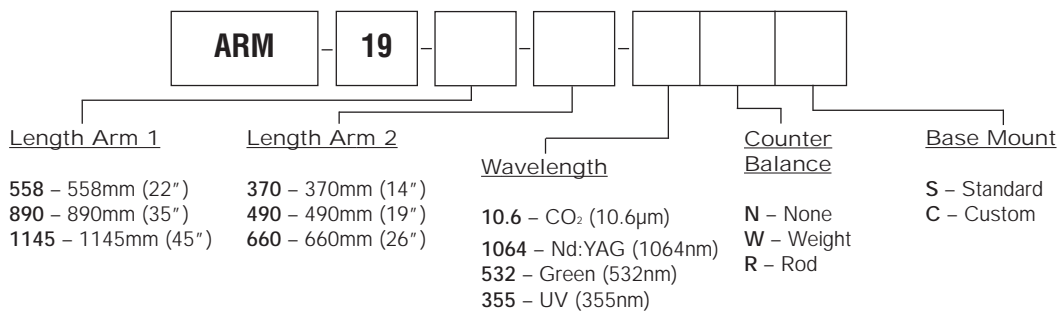
Industrial Articulated Arms provide sealed beam delivery with constant path length on moving systems. With larger bearings and thicker tube cross sections, these arms provide higher accuracy than arms designed for medical applications.



ARM-19 Specifications

- Gray Ceramic Hard-Coat Tubes & Knuckles with Stainless Steel Bearing Cups
- Standard 1" -32 Output Thread
- 19mm Clear Aperture
- Sealed Bearings
- Counterweight = 4.5kg, Arm = 2.7kg
- Custom Configurations Available

Part Numbering Anatomy



Specifications subject to change without notice. Consult Haas Laser Technologies for Details.



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"QUICK-MOUNT" BEAM DELIVERY TUBES & COUPLERS BTQ-19 SERIES

- Sealed Beam Path Containment
- Tubes Can be Easily Cut to Any Length
- Allows Beam Tubes to be Removed from Beam Path for Alignment



BTQ-19-CS-CM

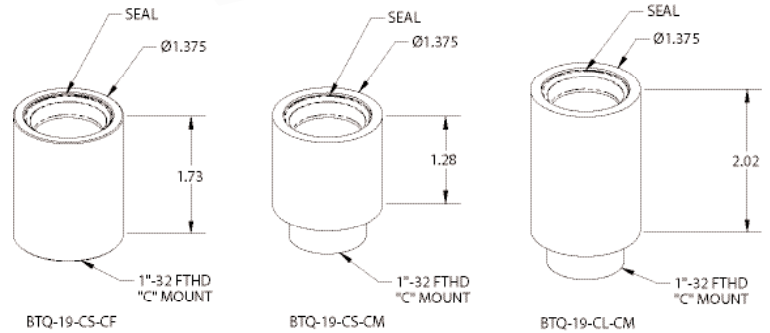
BTQ-19-CS-CF



BT-19-T-0300 Shown with BTQ-19-CL-CM

Low Power Laser Series

"Quick-Mount" Beam Delivery Tubes are high-grade anodized aluminum tubes that provide sealed containment of the laser beam path. Tubes are supplied in standard lengths that can be easily cut to any desired length. Use with a "Quick-Mount" Coupler on each end to complete the system. Each Coupler has a 1"-32 thread on one end with a sealed receptacle for the Beam Tube on the other end.

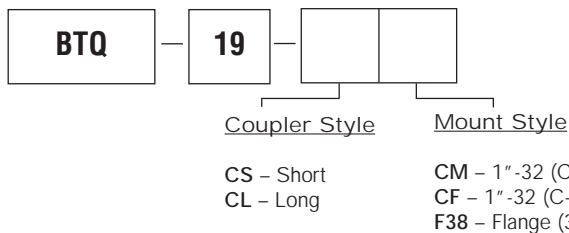


BTQ-19 Specifications

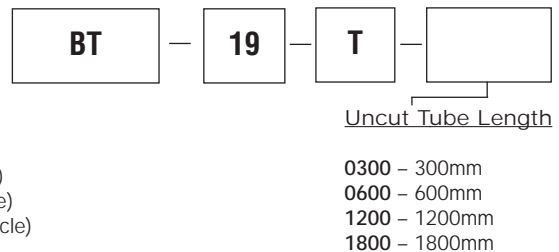
- High-Grade Anodized Aluminum
- Internal Non-Metallic Seals
- Standard 1"-32 Mounting Thread (C-Mount)
- 19mm Clear Aperture
- Coupler Length (L) = 51mm
- Coupler Diameter = 35mm

TO SIZE TUBE LENGTH:
SUBTRACT 30mm
FROM COMPONENT
FACE-TO-FACE DISTANCE

Part Numbering Anatomy: COUPLER



Part Numbering Anatomy: TUBE



Specifications subject to change without notice.
Consult Haas Laser Technologies for Details.



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BEAM TUBES & LOCKING RING

BTA-19 SERIES

Low Power Laser Series

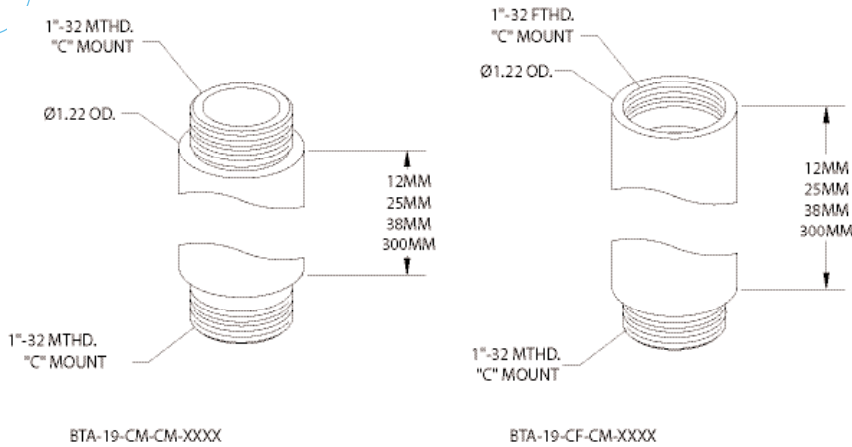


BTA-19-CM-CM-0012 Shown

BTA-19-CM-CM-025 Shown

- Sealed Containment of Beam Path
- Rigidly Mount Beam Delivery Components
- Custom Lengths Available

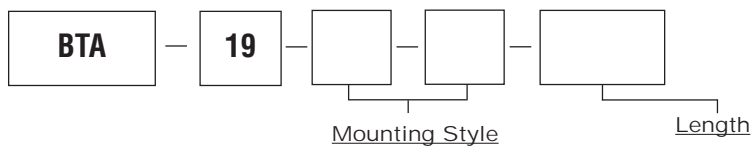
Beam Delivery Tubes are high-grade anodized aluminum tubes, which provide sealed containment of the laser beam path. These beam tubes have a 19mm clear aperture with 1" -32 mounting threads. The tubes provide a method to rigidly mount beam delivery components.



BTA-19 & LR-BT-19 Specifications

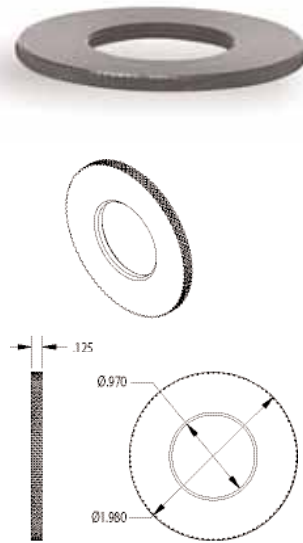
- High Grade Anodized Aluminum
- Standard 1" -32 Mounting Thread (C-Mount)
- 19mm Clear Aperture
- Custom Lengths Available

Part Numbering Anatomy



CM - 1" -32 (C-Mount male)	0012 - 12mm	0500 - 50mm
CF - 1" -32 (C-Mount female)	0025 - 25mm	0100 - 100mm
	0038 - 38mm	0300 - 300mm

LOCKING RING



Locking Ring LR-BT-19

- 1" -32 Female Thread
- Knurled Edge
- 3mm Thick

Specifications subject to change without notice. Consult Haas Laser Technologies for Details.



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TELESCOPIC BEAM TUBES

BTT-19 SERIES

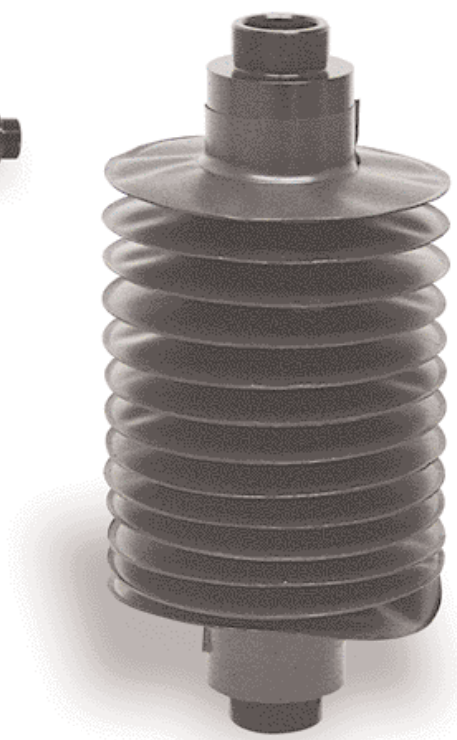
- Protection from Misaligned Beams
- Custom Lengths & Strokes

Call us with your custom application criteria!



BTT-19-CM-CM-100-200-V shown.

Telescopic Beam Tubes are typically used when a part of the delivery system is attached to a translating axis. The BBT has telescopic aluminum tubes to ensure protection from misaligned beams. Sealing is accomplished by either internal shaft seals or by an external bellows.

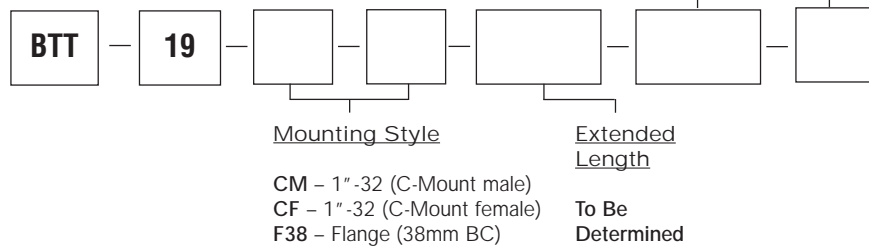


Low Power Laser Series

BTT-19 Specifications

- High-Grade Anodized Aluminum
- Internal Non-Metallic Seals (optional)
- Neoprene or Gortex® Bellows (optional)
- Standard 1" -32 Mounting Thread (C-Mount)
- 19mm Clear Aperture
- Custom Lengths & Strokes

Part Numbering Anatomy



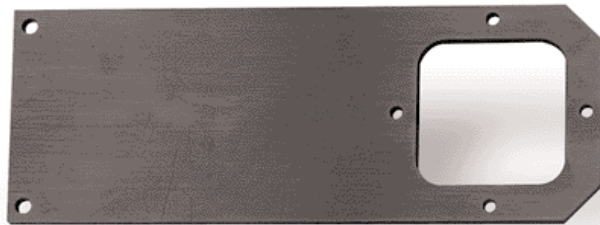
TELESCOPIC BELLOW BEAM TUBES

BTB-19 SERIES

Low Power Laser Series



BT-19 shown.



• Custom Lengths & Strokes

Call us with your custom application criteria!

Telescopic Bellow Beam Tubes are typically used when a part of the delivery system is attached to a translating axis. The BTB Bellow tubes ensure protection from mis-aligned beams.

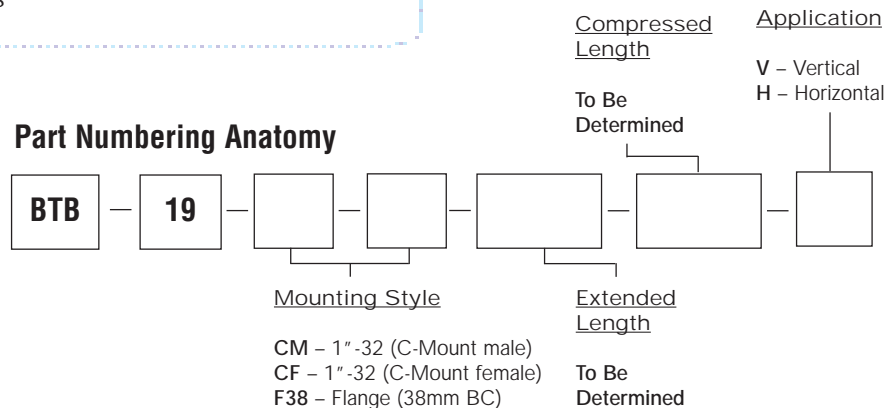
BTB-19 Specifications

- High-Grade Anodized Aluminum Hardware
- Internal Non-Metallic Seals (optional)
- Neoprene or Gortex® Bellows
- Standard 1" -32 Mounting Thread (C-Mount)
- 19mm Clear Aperture
- Custom Lengths & Strokes



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www.haaslti.com

Part Numbering Anatomy

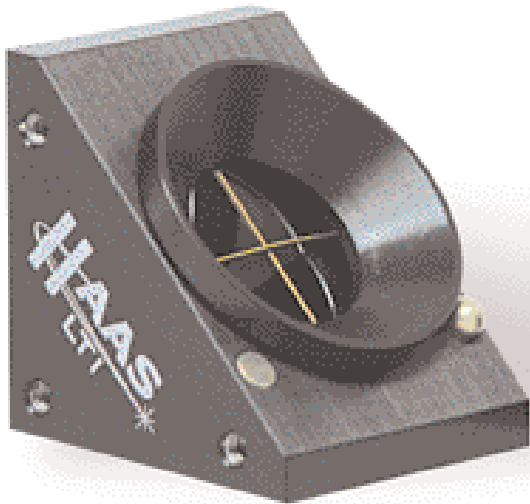


Specifications subject to change without notice. Consult Haas Laser Technologies for Details.



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19mm SERIES ACCESSORIES TARGETS/OPTIC WRENCHES



TGT-BBK-19



TGT-CMNT



OW-110-092

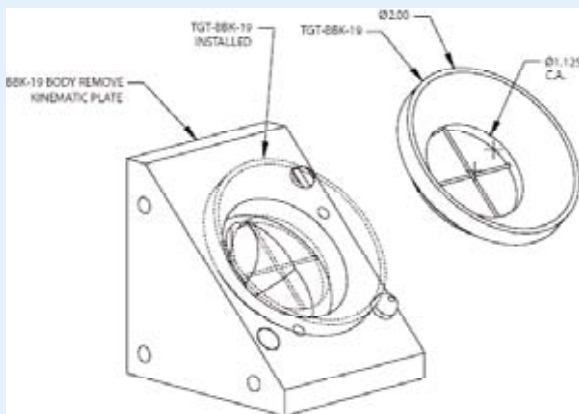
Low Power Laser Series

TARGETS

Alignment targets aid in the centering of the laser beam relative to the mechanical center of beam delivery components. The 19mm clear aperture series has two standard targets designed to satisfy most alignment needs. Both targets have an anodized aluminum construction with 0.9mm diameter brass cross hairs.

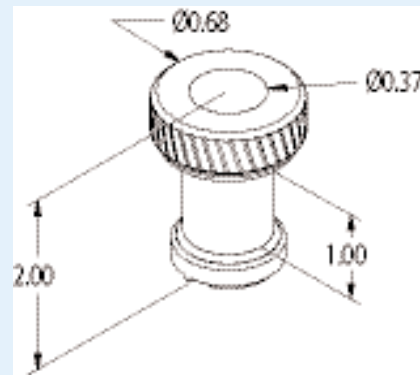
Beam Bender Alignment Target

After removing the kinematic plate of the beam bender, the Beam Bender Alignment Target is installed with the cross-hairs in the same plane as the optic. Alignment between beam benders can be made without removing beam tubes. Part#: TGT-BBK-19



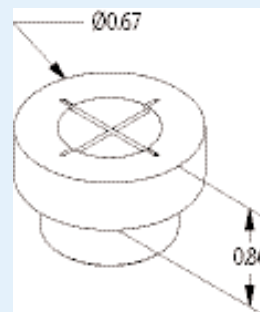
Optic Wrench

The optic wrench has an anodized aluminum construction and is specifically designed for tightening and loosening the focus lens of the PHA-19. Part#: OW-110-092



C-Mount Alignment Target

1" -32 male threads allows the C-Mount Alignment Target to connect easily with the output side of the LAM-19, PHA-19, and BEC-19, as well as other 19mm clear aperture components. Part#: TGT-CMNT



CO₂ LASER NECESSITIES

ALIGNMENT CARDS / OPTIC CLEANING

Low Power Laser Series

CO₂ THERMAL ALIGNMENT CARDS

Thermal sensitive CO₂ alignment cards are used to align optical components to the laser beam axis. They can also be used to document the laser beam shape, mode, intensity, divergence and energy distribution. Use the back of the card to record important laser parameters. The 82mm x 187mm size cards come packaged in quantities of 100.

Thermal Alignment Cards
Part#: AC-100



OPTIC CLEANING KIT

The Optic Cleaning Kit contains the proper tools to clean CO₂ optics. A cleaning procedure card is included for reference. Each kit includes: Solvent Free Lens Cleaner (2oz.), German Blower Brush, 100% Cotton Swabs with Wooden Stem (100), Lens Cleaning Paper (50), Finger Cots (10), Hemostat Pliers and an Optic Cleaning Holder.

Optic Cleaning Kit
Part#: OCK-50



Specifications subject to change without notice.
Consult Haas Laser Technologies for Details.

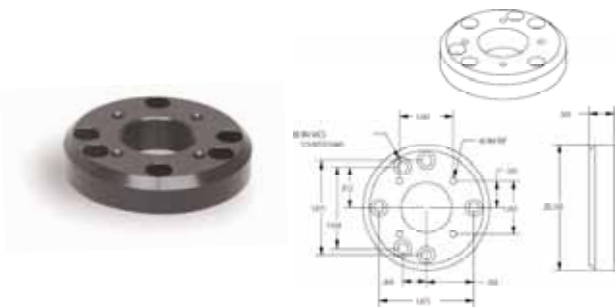
LASER BEZEL ADAPTERS FOR UNIVERSAL LASER SYSTEMS LASERS 19mm SERIES

Laser Bezel Adapters provide a sealed connection of 19mm Series components to the industry's most common low power lasers. Custom designs are also available.

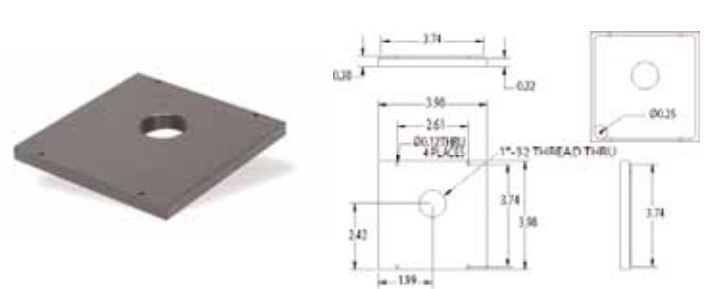
- Provide Sealed Connections for 19mm Components
- Custom Designs Available

Low Power Laser Series

Universal Laser Systems, ULC-xx-OEM Part#: ADP-UNIV1-CMNT **Bolts to Modified Laser Bezel**

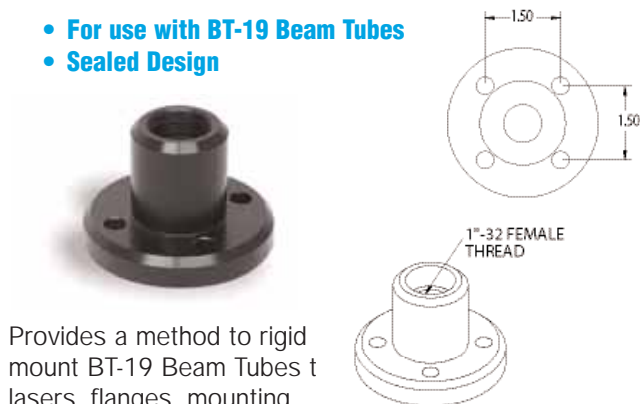


Universal Laser Systems, UL-xx-OEM Part#: ADP-UNIV2-CMNT **Replaces Laser Bezel**



For Use with BTA Threaded Beam Tubes Part#: ADP-19-CMNT

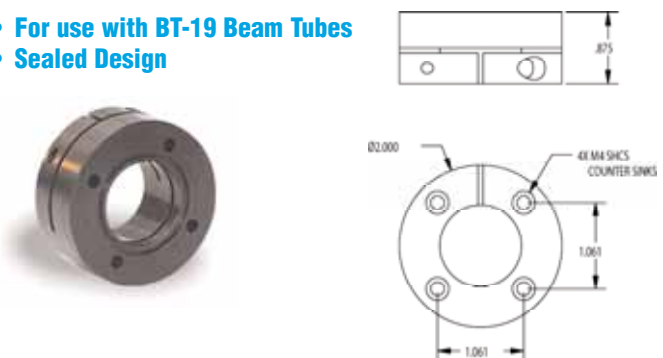
- For use with BT-19 Beam Tubes
- Sealed Design



Provides a method to rigid mount BT-19 Beam Tubes to lasers, flanges, mounting plates, etc...

Beam Tube Coupler Part#: TC-19

- For use with BT-19 Beam Tubes
- Sealed Design



UNIVERSAL SERIES

QUICK-REFERENCE PART NUMBER GUIDE

Low Power Laser Series

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Specifications subject to change without notice.
Consult Haas Laser Technologies for Details.