

Shanghai BOCI Electronic Technology Co., Ltd.

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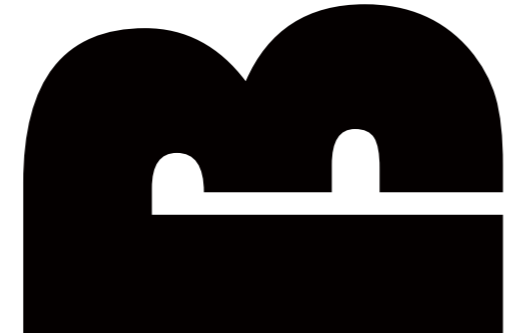
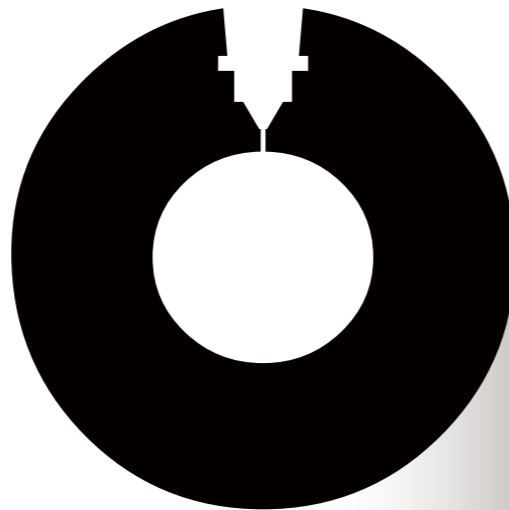
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**BOCI**

To bring you intelligent manufacturing

# BLT — Intelligent Cutting Head Brochure

V24.2

Shanghai BOCI Electronic Technology Co., Ltd.





BLT310



BLT4XX



BLT6X2H



BLT8X0H



BLT6X2MA



BLT9X0MA



BLTA140M

## Plane Cutting Head Catalog

Function	Model	BLT310 Series	BLT4XX Series	BLT6X2H Series	BLT8X0H Series	BLT6X2M Series	BLT9X0MA Series	BLTA140M Series
		≤4kW	≤40kW	≤60kW	≤20kW	≤40kW	≤40kW	≤80kW
Collision Protection		✓	✓	✓	✓	✓	✓	✓
Protective Window Monitoring		✓	✓	✓	✓	✓	✓	✓
Bottom Stray Light Monitoring			✓*	✓	✓	✓	✓	✓
Closed-Loop Monitoring		✓	✓	✓	✓	✓	✓	✓
Fast Focusing		✓	✓	✓	✓	✓	✓	✓
Built-In Amplifier		✓	✓	✓	✓	✓	✓	✓
Nozzle Cooling		✓	✓	✓	✓	✓	✓	✓
Amplifier Water Cooling		✓	✓	✓	✓	✓	✓	✓
Cutting Gas Pressure Monitoring		✓	✓	✓	✓	✓	✓	✓
Smart Laser Off			✓	✓	✓	✓	✓	✓
Plane/Bevel Cutting			✓					
Focusing Lens Temperature Monitoring				✓	✓	✓	✓	✓
Stray Light Monitoring				✓	✓	✓	✓	✓
Smart Piercing				✓	✓	✓	✓	✓
O2/N2 Process Monitoring				✓	✓	✓	✓	✓
Protective Window Anti-Explosion			✓*	✓	✓	✓	✓	✓
Co-edge Piercing Monitoring				✓	✓	✓	✓	✓
Variable Beam Shape					✓		✓	
Cutting Path Monitoring						✓	✓	✓
Coaxial Monitoring						✓	✓	✓
Nozzle Quality Monitoring						✓	✓	✓
Nozzle Misalignment Monitoring						✓	✓	✓
Auto Centering						✓	✓	

\* BLT421, BLT441 do not support Protective Window Anti-Explosion feature;  
 BLT462, BLT482, BLT4102 support Protective Window Anti-Explosion;  
 BLT421 does not support Bottom Protective Cartridge Sealing

# BLT310 Series Plane



Focus Range:  $\pm 40\text{mm}$

Reposition Precision:  $\pm 0.01\text{mm}$

Focus Speed:  $300\text{mm/s}$

Max Gas Pressure:  $25\text{Bar}$

Laser Wavelength:  $1030\text{-}1090\text{nm}$

Cutter Model	BLT310 Series
Support Power Range	$\leq 4\text{kW}$
Fiber Interface	QBH, EOC
Focal Length (mm)	150, 200

## BLT310 Series Features

### Water Cooling

#### More Stable Cutting

The cutting head water circuit is protected with an anti-corrosion coating to prevent corrosion over prolonged use, which can lead to block-ages and reduced cooling effectiveness.



### Protective Window Temperature Monitoring

#### More Stable Performance

The sensor does real time temperature monitoring. When contamination detected, it will automatically turn off laser and give alarm, this way to limit risk of protective window shattering.



## BLT310 Series Features

### Gas Pressure Monitoring Sensor

#### More Stable Cutting

Real-time monitor the gas output to mitigate the impact on cutting quality.



### Fast Focusing

#### Higher Efficiency

Focal position vertically adjusted by collimating lens, realizing higher efficiency.

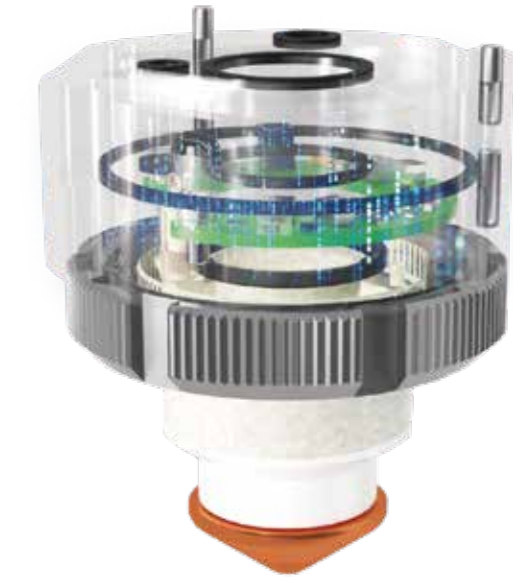


## BLT310 Series Features

### Amplifier Sensor

#### Higher Cutting Precision

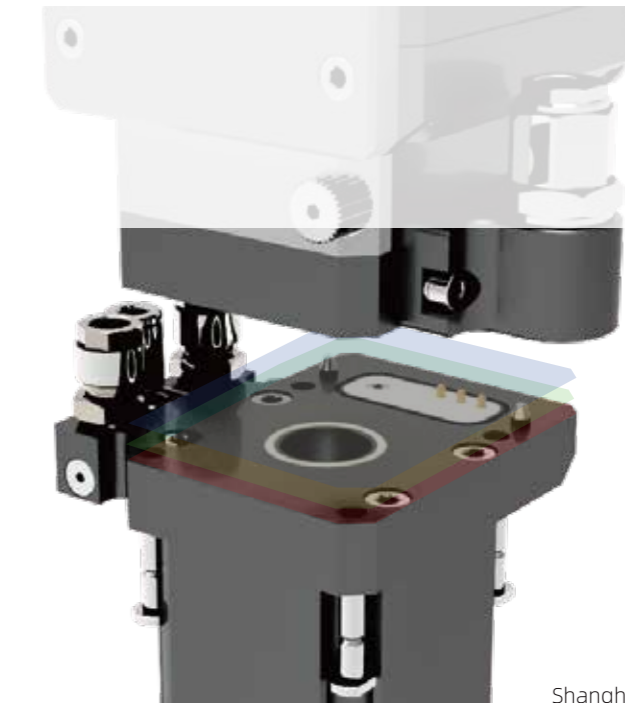
Integrated capacitance amplifier sensor makes a more precise and stable following.



### Collision Protection

#### Simpler Maintenance

Protective Screws keep cutting head from damage. No time wasting on Depot Repair.



# BLT4XX Series

## Plane/ Bevel

Focus Range:  $\pm 50\text{mm}$

Reposition Precision:  $\pm 0.01\text{mm}$

Focus Speed:  $500\text{mm/s}$

Max Gas Pressure:  $25\text{Bar}$

Laser Wavelength:  $1030\text{-}1090\text{nm}$

Cutter Model	BLT421/BLT421S Series	BLT441 Series	BLT462 Series	BLT482 Series	BLT4102 Series
Support Power Range	$\leq 8\text{kW}$	$\leq 15\text{kW}$	$\leq 20\text{kW}$	$\leq 30\text{kW}$	$\leq 40\text{kW}$
Fiber Interface	QBH, EOC	Q+, QD, QBH, ADD			
Focal Length (mm)	150, 200	200	200	200, 300	300



## BLT4XX Series Features

### Collision Protection

#### Simpler Maintenance

Protective Screws keep cutting head from damage.

No time wasting on Depot Repair.



## BLT4XX Series Features

### Protective Window Monitoring

#### Improve Cutting Quality

Monitor the contamination to avoid its impact on cutting quality.



### Fast Focusing

#### Less Focusing Time

Collimating lens is used to adjust the focal position vertically.



## BLT4XX Series Features

### Bevel Cutting

#### One Time Forming

With AB swing axis can support cutting V, Y, X and other types of bevels, maximum  $\pm 45^\circ$  bevel and one time forming, reducing beveling process, reducing cost and increasing efficiency.



### Closed-Loop Monitoring

#### Smarter and More Efficient

Built-in multi-sensor, real time closed-loop intelligent monitoring, rapid diagnosis of problems and early warning.



### Water Cooling

#### Full Body Water Cooling

Cover 90% of the cutting head to improve cutting stability.



### Gas Pressure Monitoring

#### More Stable Cutting

Real-time monitor the gas output to reduce the impact on the cutting quality.



# BLT6X2H Series

## Plane

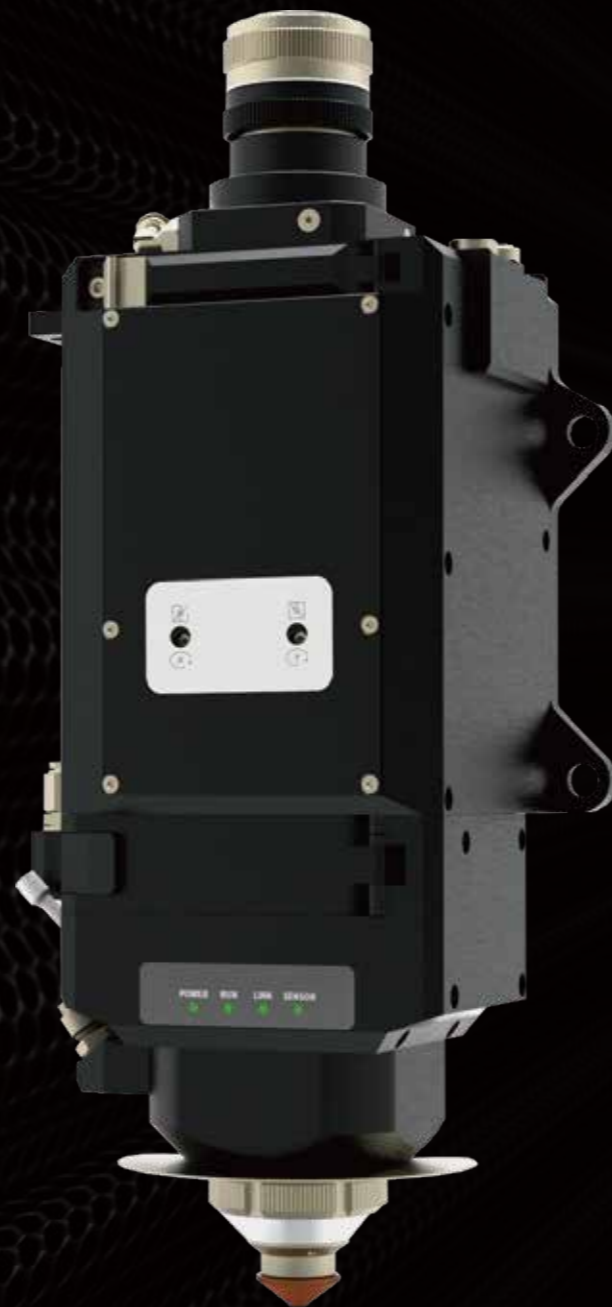
Focus Range:  $\pm 50\text{mm}$

Reposition Precision:  $\pm 0.01\text{mm}$

Focus Speed:  $500\text{mm/s}$

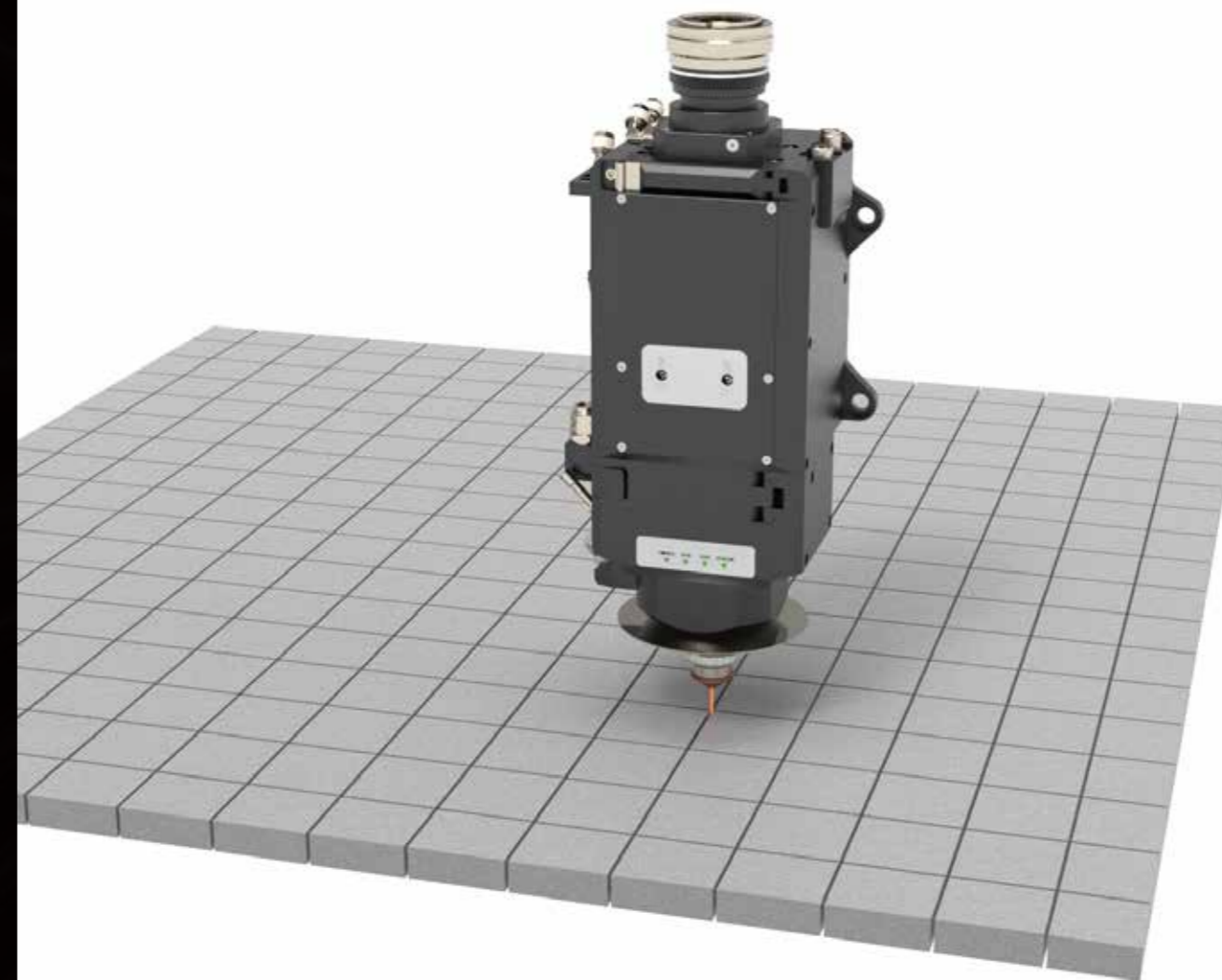
Max Gas Pressure:  $25\text{Bar}$

Laser Wavelength:  $1030\text{-}1090\text{nm}$



Cutter Model	BLT642H Series	BLT662H Series	BLT682H Series	BLT6102H Series	BLT6120H Series
Support Power Range	$\leq 15\text{kW}$	$\leq 20\text{kW}$	$\leq 30\text{kW}$	$\leq 40\text{kW}$	$\leq 60\text{kW}$
Fiber Interface	Q+, QD, QBH, ADD				
Focal Length (mm)	200	200	200, 300	300, 400	300

## BLT6X2H Series Features



## Co-edge Piercing Monitoring

Improve Cutting Efficiency

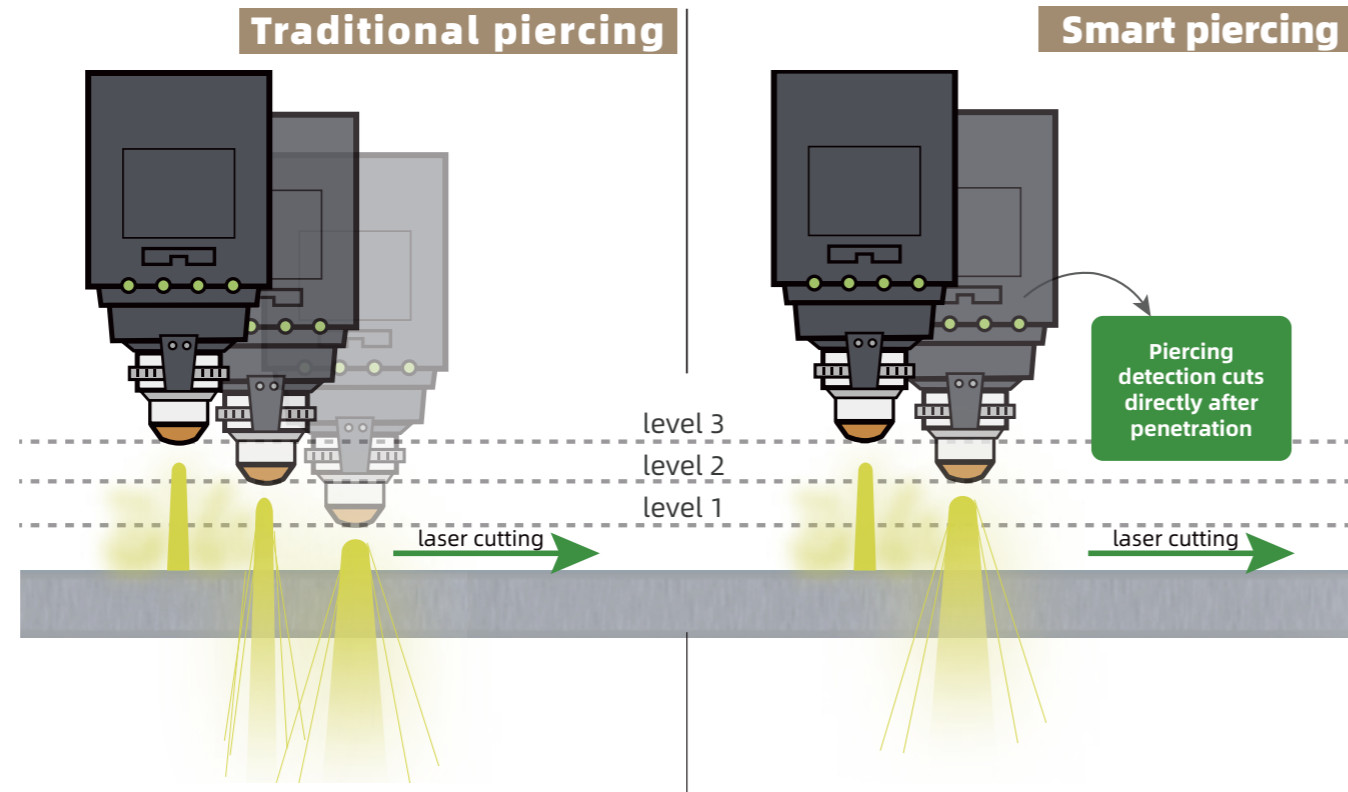
Detect whether piercing is required at co-edged positions.

## BLT6X2H Series Features

### Smart Piercing

#### Enhance Piercing Efficiency

Monitor the piercing and cut immediately after piercing to improve the efficiency and reduce costs.

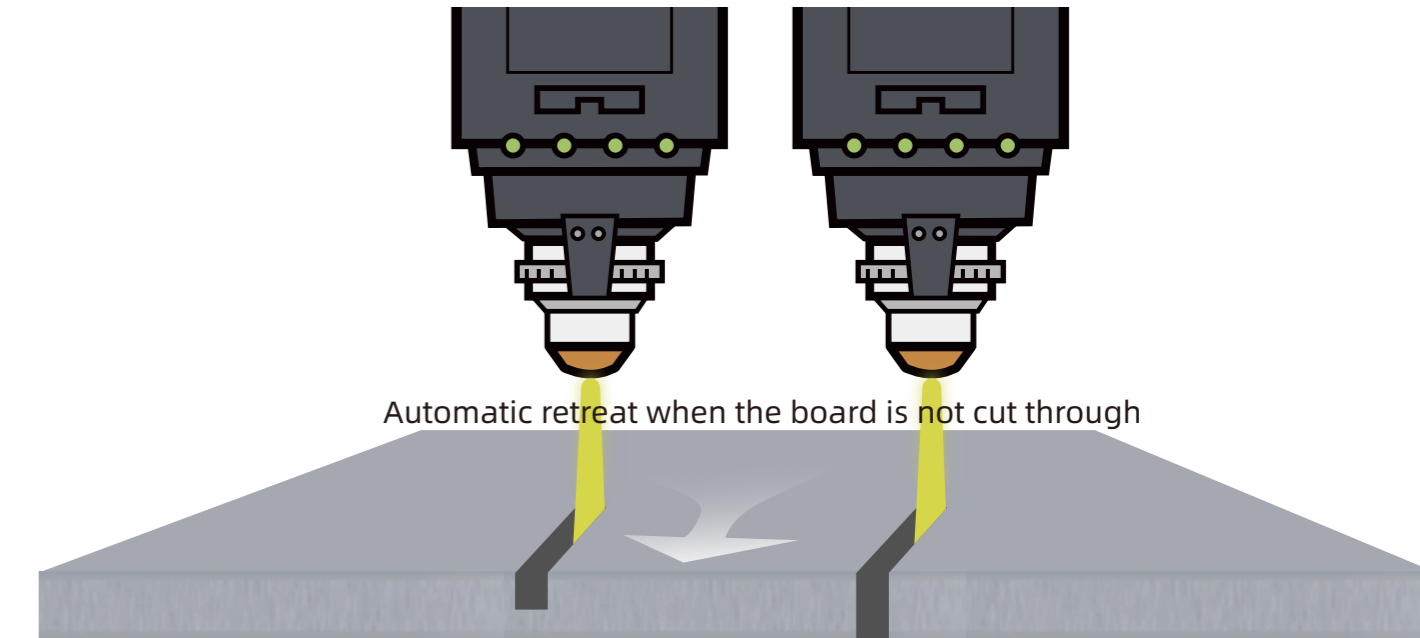


## BLT6X2H Series Features

### Auto ReCut

#### Stable and Efficient Cutting

If a part is not cut through, the cutting head will return and cut it again.



## BLT6X2H Series Features

### Stray Light Monitoring

#### Easy Troubleshooting

Monitor the stray light to prevent damages to the cutting head and to prevent poor cutting.



## BLT6X2H Series Features

### Protective Window Anti-Explosion

#### Safer Production

Contamination sensor and system algorithms are upgraded to monitor the stray light of the protective window in real-time.



# BLT8X0H Series

## Variable Beam Cutting Head



Focus Range:  $\pm 50\text{mm}$

Reposition Precision:  $\pm 0.01\text{mm}$

Focus Speed:  $500\text{mm/s}$

Max Gas Pressure:  $25\text{Bar}$

Laser Wavelength:  $1030\text{-}1090\text{nm}$

Cutter Model	BLT840H Series	BLT860H Series
Support Power Range	$\leq 15\text{kW}$	$\leq 20\text{kW}$
Fiber Interface	Q+, QD	
Focal Length (mm)	200	
Variable Beam Shape	Gaussian Distribution/Homogeneous Distribution	

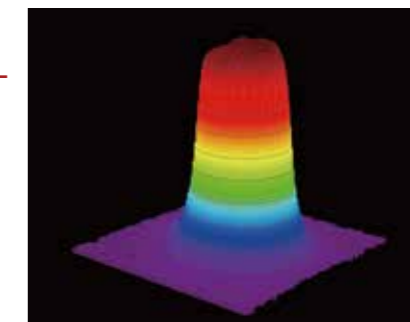
### BLT8X0H Series Features //



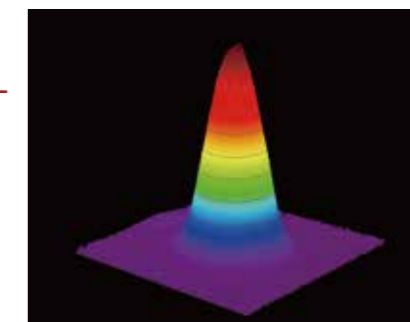
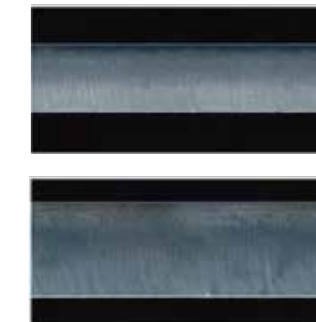
### Variable Beam Shape

#### More Efficient Cutting //

The beam pattern can be switched at any time for different plates, advanced in cutting both thick and thin plates, doubling the efficiency.



Homogeneous "Flat Top" distribution



Gaussian distribution

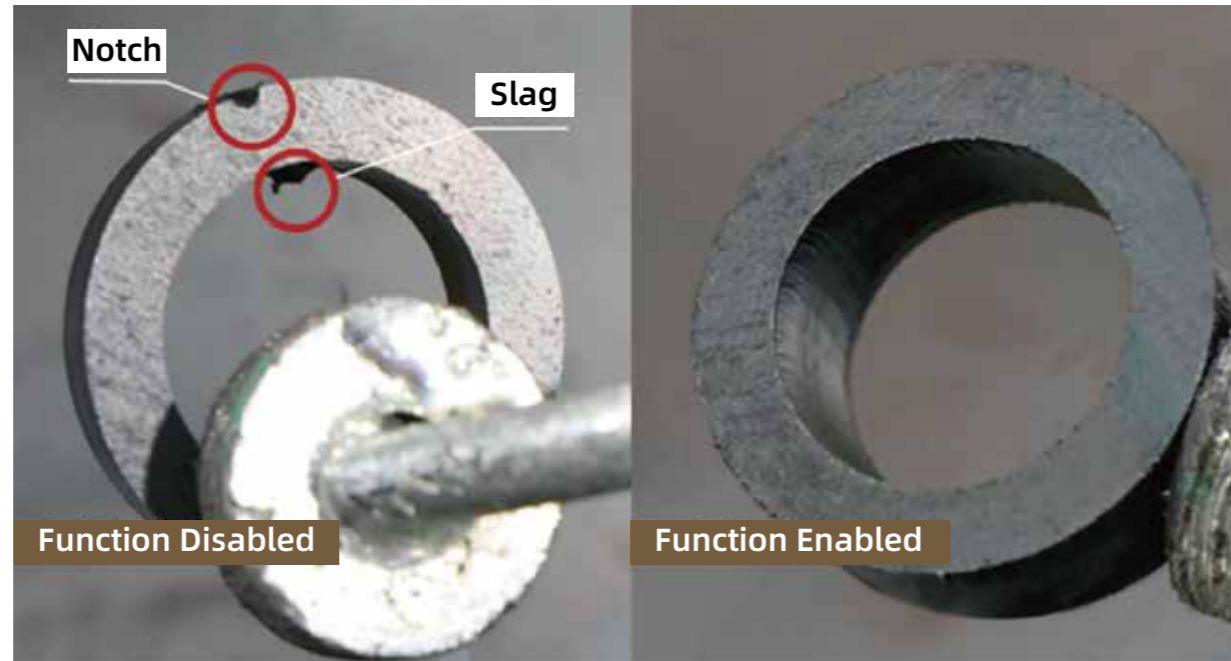


## BLT8X0H Series Features

### Smart LaserOff

#### Improve Cutting Quality

Section and surface finish of inner and outer contours of parts are smooth without slag.



## BLT8X0H Series Features

### Collision Protection

#### Simpler Maintenance

Protective Screws keep cutting head from damage.  
No time wasting on Depot Repair.



# BLT6X2MA Series Cutting Path Monitor

Focus Range: ±50mm

Reposition Precision: ±0.01mm

Focus Speed: 500mm/s

Max Gas Pressure: 25Bar

Laser Wavelength: 1030-1090nm

Cutter Model	BLT662M Series	BLT682M Series	BLT6102M Series
Support Power Range	≤20kW	≤30kW	≤40kW
Fiber Interface		Q+, ADD	
Focal Length (mm)	200	300	300、400

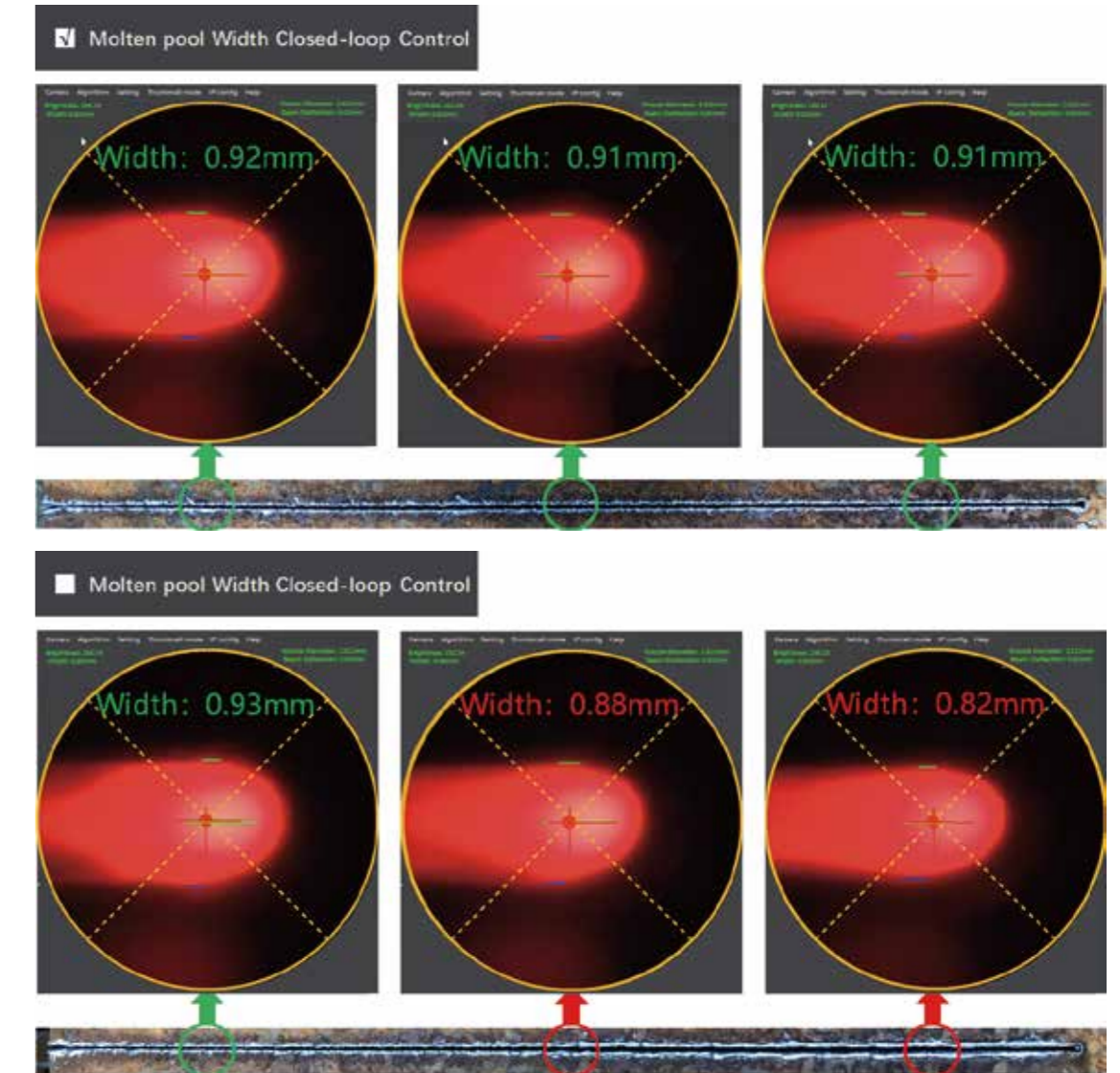


## BLT6X2MA Series Features

### Cutting Path Monitoring

#### More Stable Cutting

Solve the pain point of temperature drift by monitoring the seam width in real time during the cutting process. Intelligent adjustment of focus to ensure consistent cutting results over a long period of time.



## BLT6X2MA Series Features



### Coaxial Monitoring

#### Efficient and Precise Adjustment

Detect the coaxial deviation of the optical core by visual imaging of the melt pool, so that the coaxial adjustment more convenient and accurate.



### Auto Centering

#### Intelligent Cutting

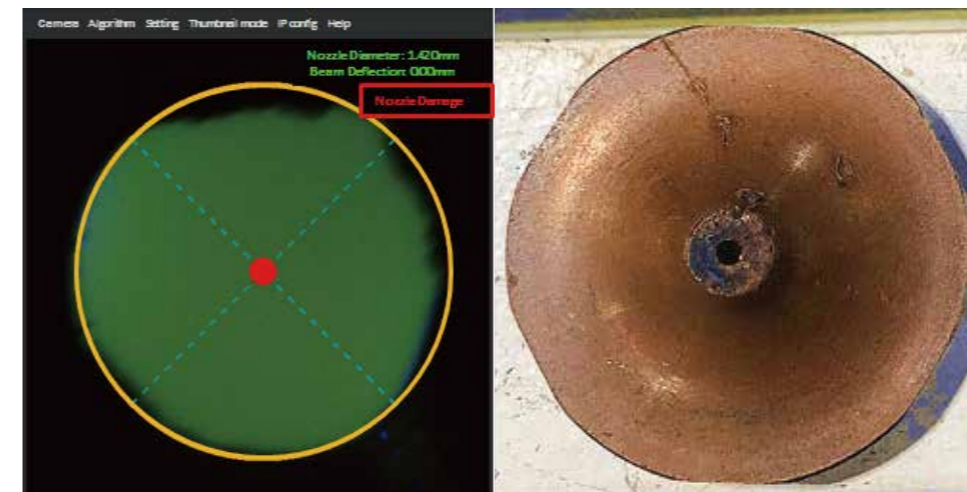
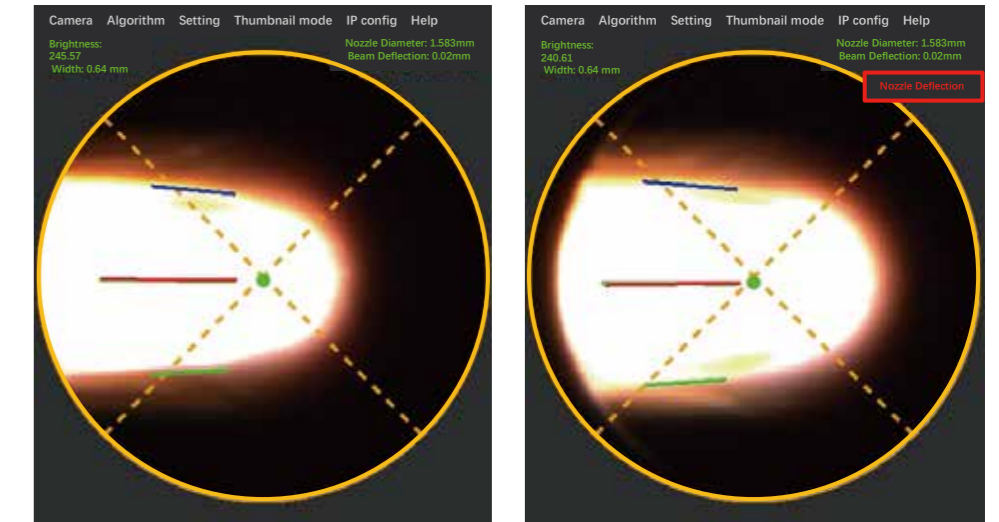
By collecting molten pool image, the sensor detects any coaxial deviation of the laser beam and automatically adjust it in real-time, ensuring consistent cutting quality.

## BLT6X2MA Series Features

### Nozzle Misalignment Monitoring

#### Easy to Maintain

Intelligent monitoring of nozzle misalignment caused by minor cuts and bumps using coaxial vision, and trigger warning alerts when necessary.



### Nozzle Quality Monitoring

#### Safe and Efficient

Real-time monitoring of nozzle profile and determination of damage deformation. Alarm alerts according to the degree of damage.

# BLT9X0MA Series

## Variable Beam Shape

Focus Range: +70~-150(mm)

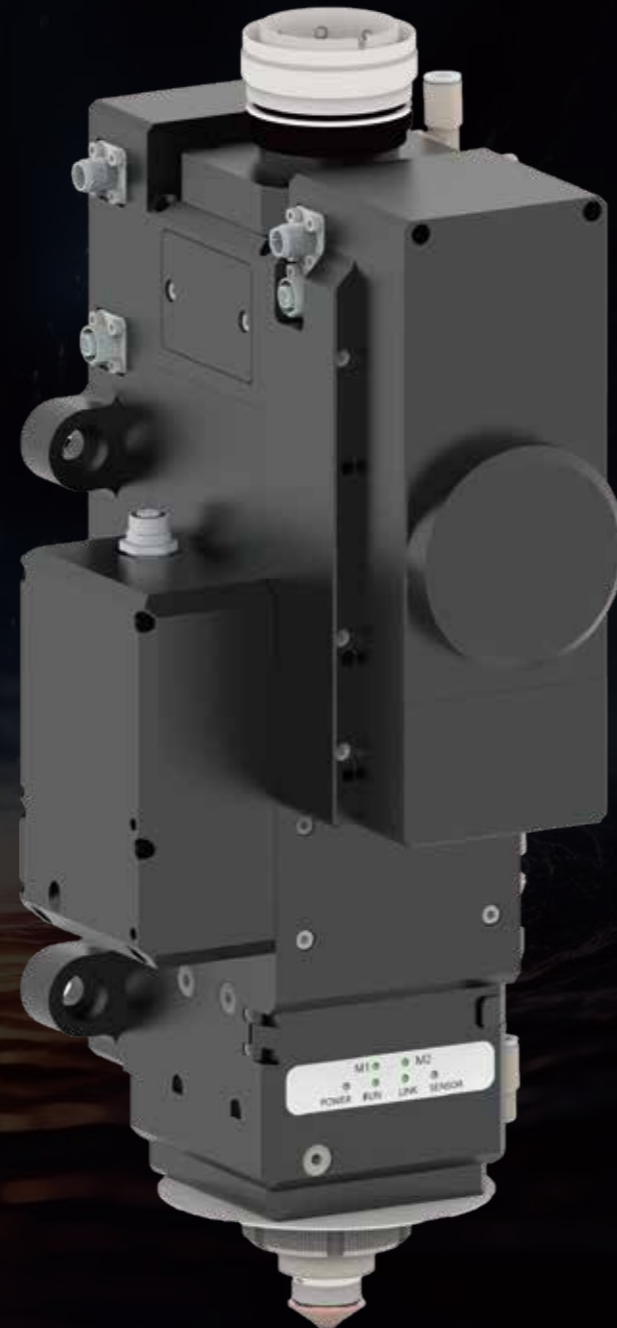
Reposition Precision: ±0.01mm

Focus Speed: 500mm/s

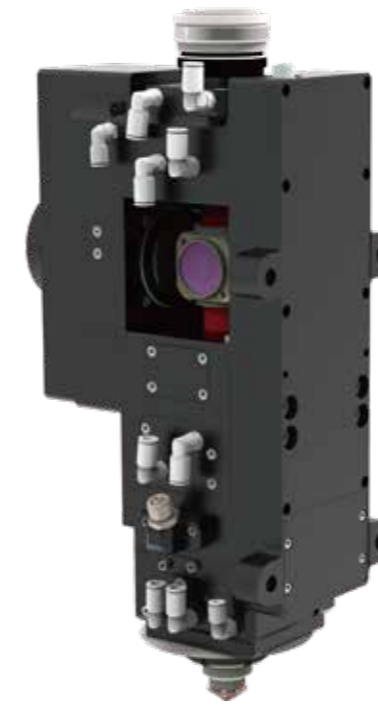
Max Gas Pressure: 25Bar

Laser Wavelength: 1030-1090nm

Cutter Model	BLT9100MA
Support Power Range	≤40kW
Fiber Interface	Q+, ADD
Focal Length (mm)	200 & 400
Variable Beam Shape	M=2.0/M=4.0



### BLT9X0MA Series Features



#### Variable Beam Shape

##### Efficient Cutting

The switching between small and large beam spots is used for ultrahigh-power cutting of thin/thick plates, support both air and oxygen cutting, improving cutting efficiency and quality.

#### Auto Centering

##### Intelligent Cutting

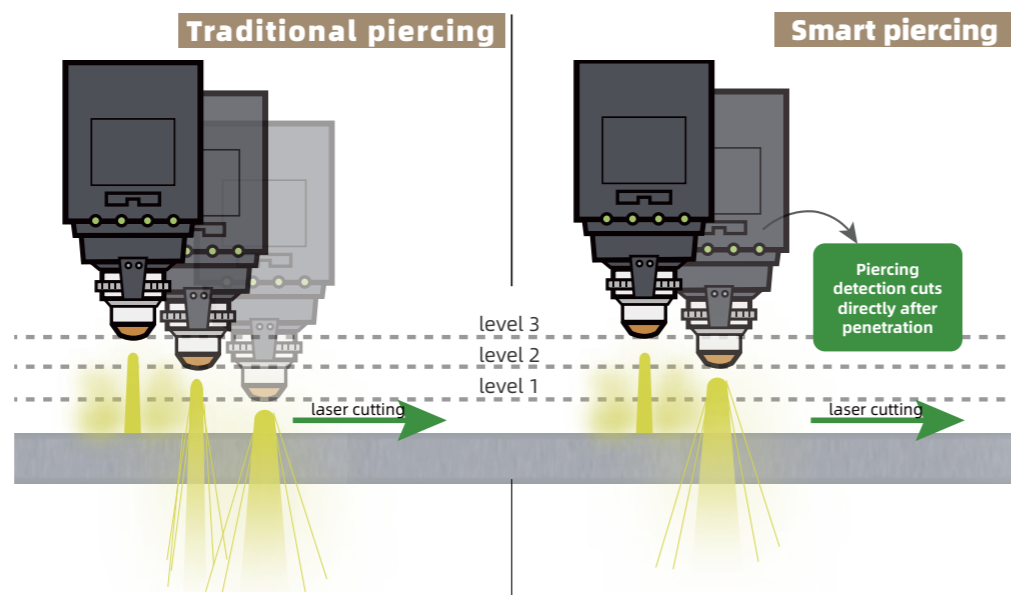
By collecting molten pool image, the sensor detects any coaxial deviation of the laser beam and automatically adjust it in real-time, ensuring consistent cutting quality.

## BLT9X0MA Series Features

### Smart Piercing

#### Enhance Piercing Efficiency

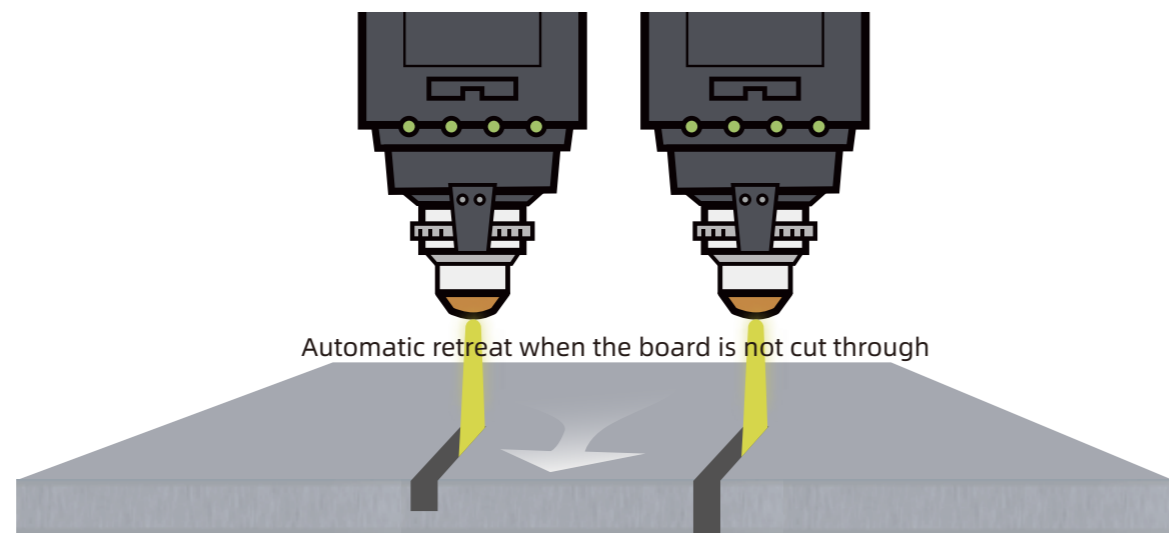
Monitor the piercing and cut immediately after piercing to improve the efficiency and reduce costs.



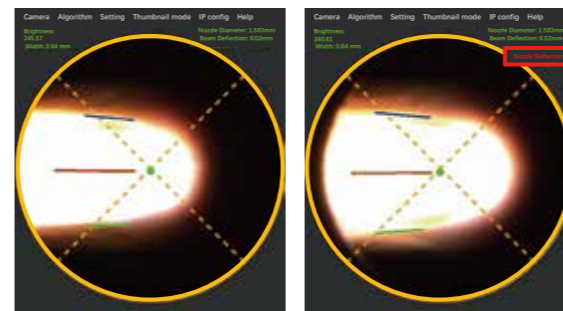
### Auto ReCut

#### Stable and Efficient Cutting

If a part is not cut through, the cutting head will return and cut it again.



## BLT9X0MA Series Features



### Nozzle Misalignment Monitoring

#### Easy to Maintain

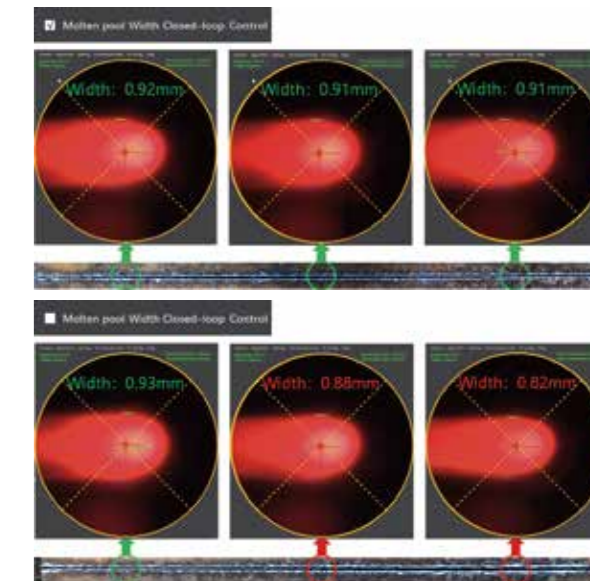
Intelligent monitoring of nozzle misalignment caused by minor cuts and bumps using coaxial vision, and trigger warning alerts when necessary.



### Nozzle Quality Monitoring

#### Safe and Efficient

Real-time monitoring of nozzle profile and determination of damage deformation. Alarm alerts according to the degree of damage.



### Cutting Path Monitoring

#### More Stable Cutting

Solve the pain point of temperature drift by monitoring the seam width in real time during the cutting process. Intelligent adjustment of focus to ensure consistent cutting results over a long period of time.

# BLTA140M Series

## Ultrahigh Power

Focus Range: +70~-150(mm)

Reposition Precision: ±0.01mm

Focus Speed: 500mm/s

Max Gas Pressure: 25Bar

Laser Wavelength: 1030-1090nm

Cutter Model BLTA140M Series

Support Power Range ≤80kW

Fiber Interface Q+, ADD

Focal Length (mm) 300

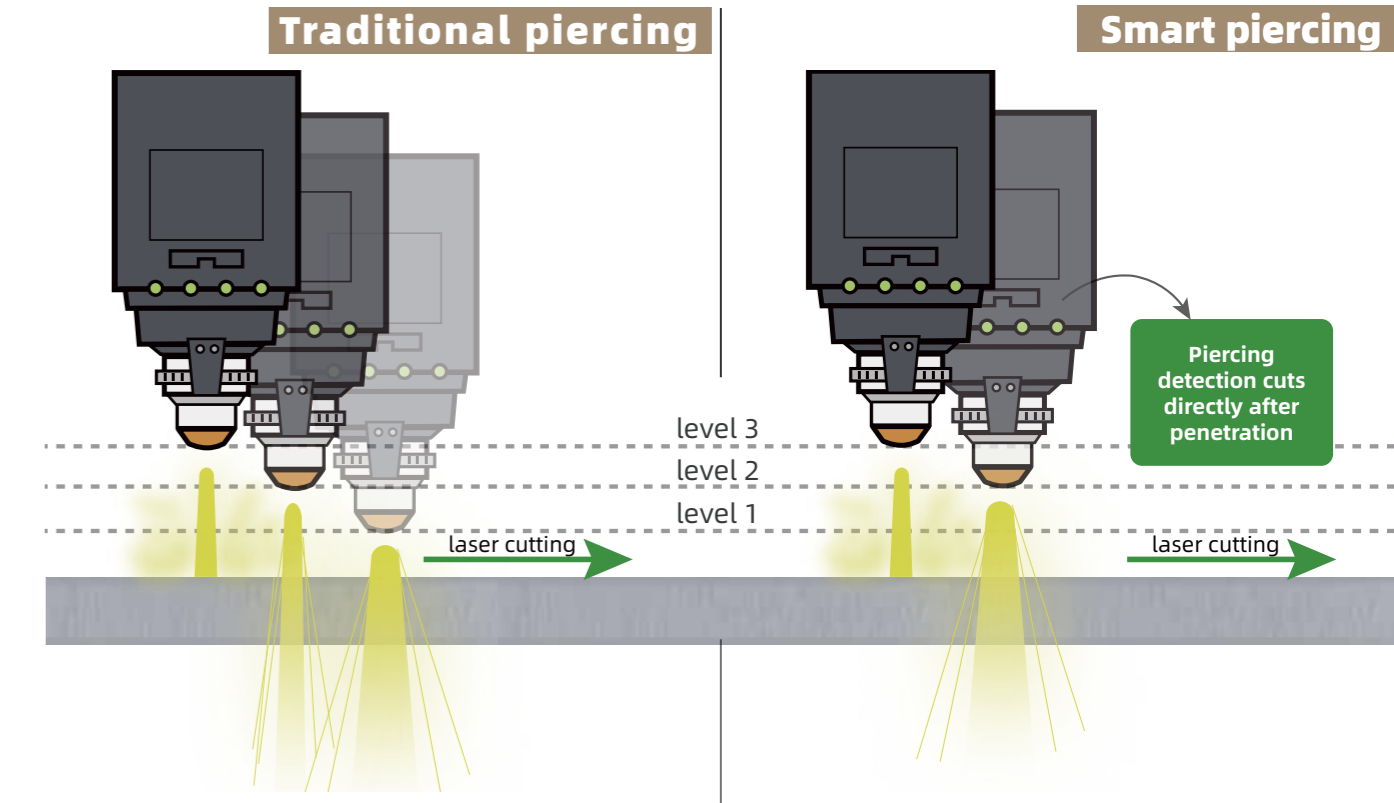


## BLTA140M Series Features

### Smart Piercing

#### Enhance Piercing Efficiency

Monitor the piercing and cut immediately after piercing to improve the efficiency and reduce costs.

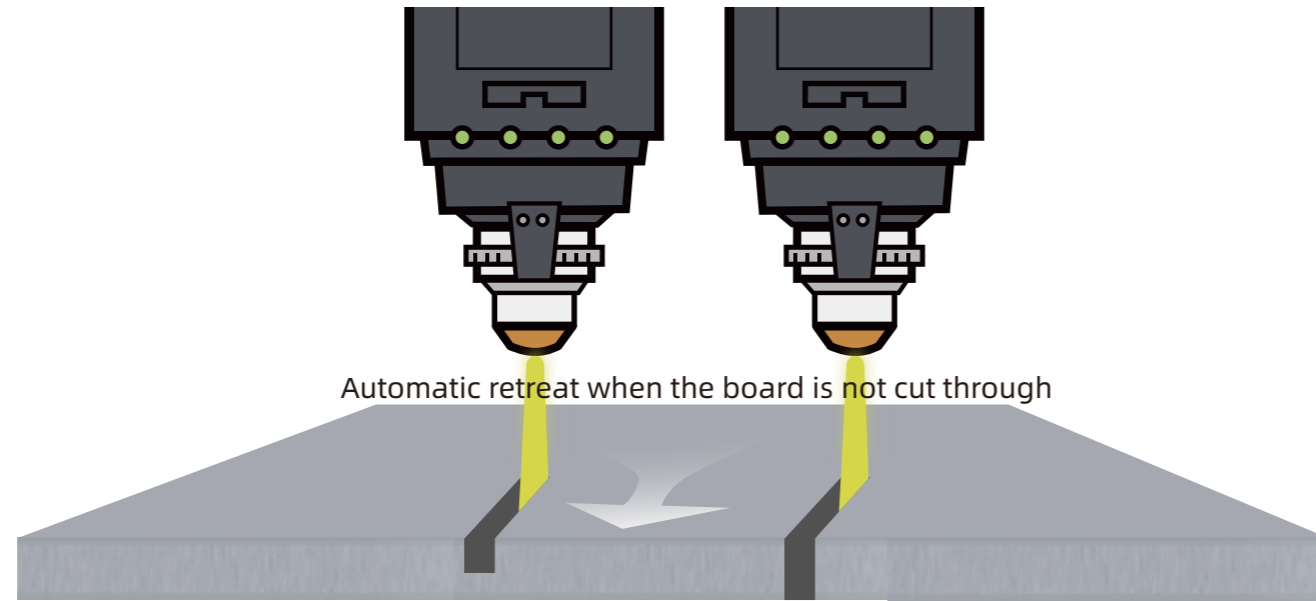


## BLTA 140M Series Features

### Auto ReCut

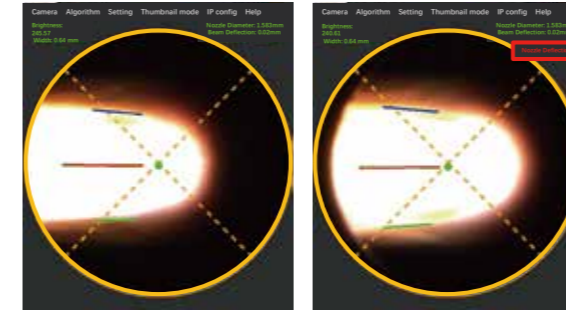
Stable and Efficient Cutting

If a part is not cut through, the cutting head will return and cut it again.



Automatic retreat when the board is not cut through

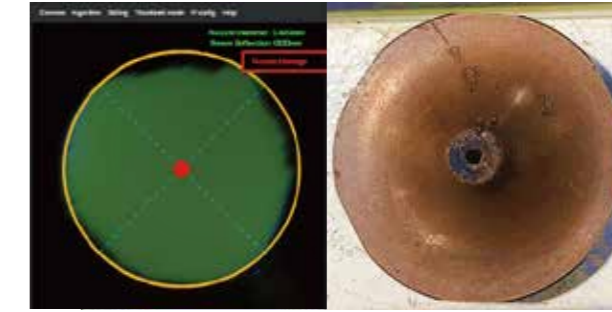
## BLTA 140M Series Features



### Nozzle Misalignment Monitoring

Easy to Maintain

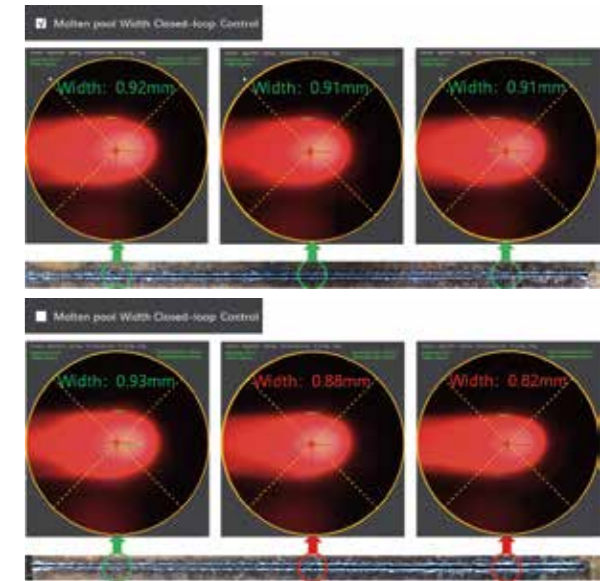
Intelligent monitoring of nozzle misalignment caused by minor cuts and bumps using coaxial vision, and trigger warning alerts when necessary.



### Nozzle Quality Monitoring

Safe and Efficient

Real-time monitoring of nozzle profile and determination of damage deformation. Alarm alerts according to the degree of damage.



### Cutting Path Monitoring

More Stable Cutting

Solve the pain point of temperature drift by monitoring the seam width in real time during the cutting process. Intelligent adjustment of focus to ensure consistent cutting results over a long period of time.



BLT3X0T Series



BLT4X1T Series



BLT5X0H Series

### 3D Cutting Head Catalog

Function	Model	BLT310T Series	BLT4X1T Series	BLT5X0H Series
		≤4kW	≤20kW	≤20kW
Closed-Loop Monitoring		✓	✓	✓
Fast Focusing		✓	✓	✓
Built-In Amplifier		✓	✓	✓
Protective Window Monitoring		✓	✓	✓
Cutting Gas Pressure Monitoring		✓	✓	✓
Collision Protection		✓	✓	✓
Bottom Protective Cartridge Sealing			✓ *	✓
Pipe Bevel Cutting			✓	✓
Smart LaserOff			✓	✓
Smart Piercing				✓
O2/N2 Process Monitoring				✓

\* BLT421 does not contain Bottom Protective Cartridge Sealing.

# BLT310T Series

## Pipe Cutting

Focus Range:  $\pm 60\text{mm}$

Reposition Precision:  $\pm 0.01\text{mm}$

Focus Speed:  $300\text{mm/s}$

Max Gas Pressure:  $25\text{Bar}$

Laser Wavelength:  $1030\text{-}1090\text{nm}$

Cutter Model: BLT310T Series

Support Power Range:  $\leq 4\text{kW}$

Fiber Interface: QBH, EOC

Focal Length (mm): 200, 250



## BLT310T Features //

### Protective Window Temperature Monitoring

Better Performance //

Real time temperature monitoring to limit risk of protective window shattering, enhance processing stability.



### Gas Pressure Monitoring

More Stable Cutting //

Real-time monitor the gas output to mitigate the impact on cutting quality.

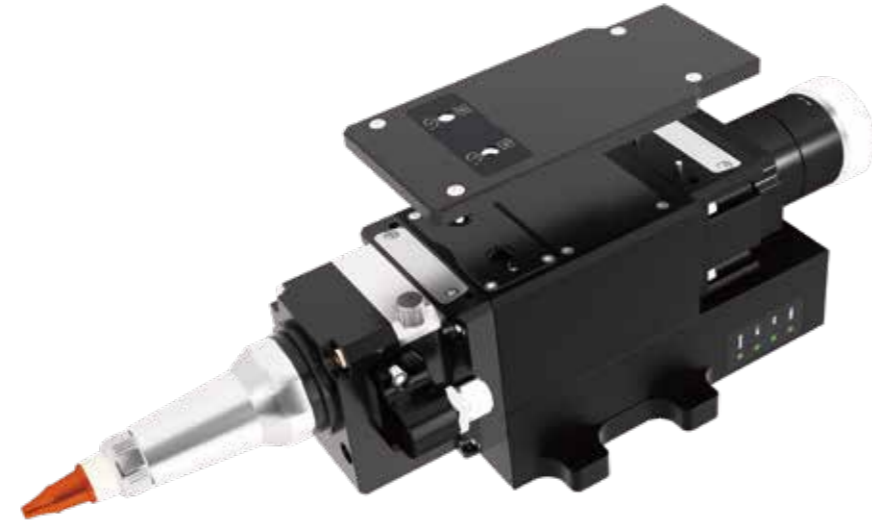


## BLT310T Features

### Front Cover Plate

#### Stronger Sealing

Anti-dust cover plate is additionally added to the optical module, extending lifespan of core windows.



### 3 Sets of Protective Windows

#### Optic Protection / Longer Windows Lifespan

Multiple enhanced protection ensures an excellent dust-proof environment.



## BLT310T Features



### Collision Protection

#### Simple Maintenance

Protective screws keep cutting head from damage. No time wasting on Depot Repair.



### Built-in Amplifier

#### Stable Capacitance

Superior immunity against interference, stabilize capacitance.



### 3D Sensing Head

#### Multi-Type Tube Cutting

Achieve cutting of various tube types such as round/square tube, U/H beam etc.

# BLT4X1T Series

## Pipe Cutting

Focus Range:  $\pm 50\text{mm}$

Reposition Precision:  $\pm 0.01\text{mm}$

Focus Speed:  $500\text{mm/s}$

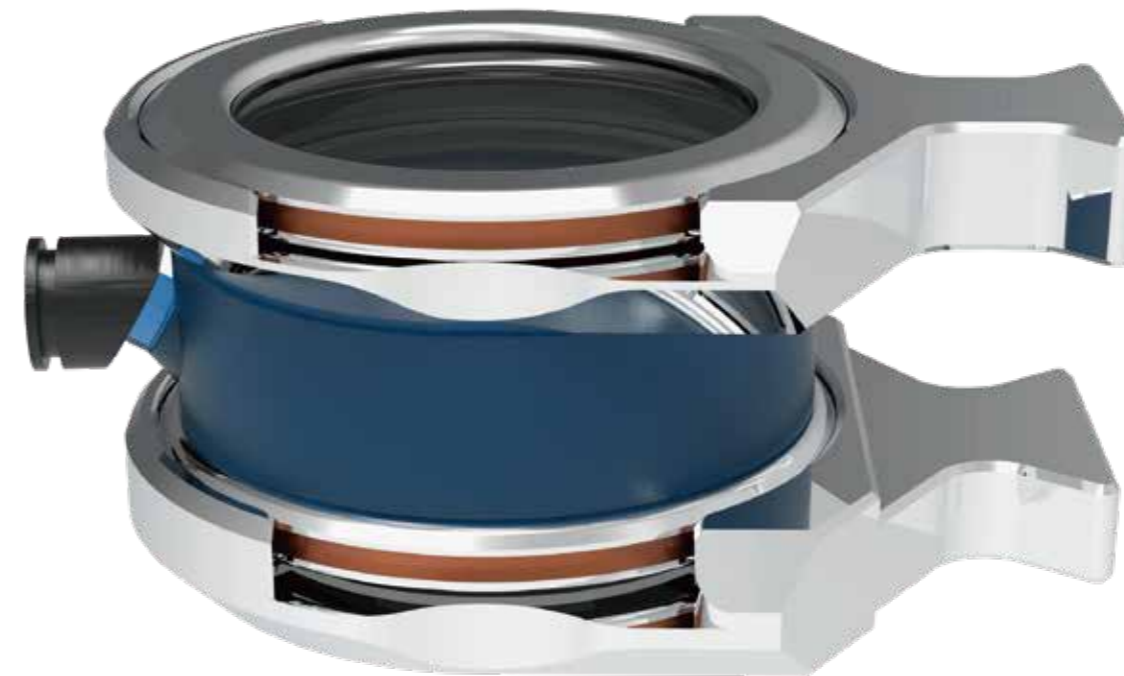
Max Gas Pressure:  $25\text{Bar}$

Laser Wavelength:  $1030\text{-}1090\text{nm}$



Cutter Model	421T/421TS Series	BLT441T Series	BLT461T Series
Support Power Range	$\leq 8\text{kW}$	$\leq 15\text{kW}$	$\leq 20\text{kW}$
Fiber Interface	QBH, EOC	QBH, Q+, QD, ADD	
Focal Length (mm)	200, 250	200, 250	250

## BLT4X1T Series Features



### Bottom Protective Cartridge Sealing

Protect the Protective Windows

Monitor the sealing of the protective windows cartridge for stable production.

## BLT4X1T Series Features

### Dust-proof Cover

#### Stronger Sealing

Added to optics cartridge to extend the lifespan of focusing and collimating lens.



### 4 Sets of Protective Windows

#### Extend Core Lens Lifespan

Protect the focusing and collimating lens and improve the cartridge sealing.



## BLT4X1T Series Features



### Built-In Amplifier

#### More Stable Capacity

Enhance the anti-interference capability.

### Collision Protection

#### Easy Maintenance

Replace it yourself and lower the cost to return it to the manufacture.



### Three-Dimensional Sensing Head

#### Multi-Type Pipe Cutting

Can achieve cutting of different types of pipes. Round pipe, square pipe, channel steel and I-beam etc.



# BLT5 Series

## Pipe/Bevel cutting

Focus Range: ±50mm

Reposition Precision: ±0.01mm

Focus Speed: 500mm/s

Max Gas Pressure: 25Bar

Laser Wavelength: 1030-1090nm



Cutter Model	BLT510 Series	BLT520/BLT520H Series	BLT540H Series	BLT560H Series
Support Power Range	≤8kW	≤8kW	≤15kW	≤20kW
Fiber Interface	QBH、EOC		QBH、QD、Q+、ADD	
Focal Length (mm)	200、250			

## BLT5X0H Series Features



## Bevel Cutting

### One Time Forming

The maximum ±45 bevel cut can be achieved. The BLT5X0H (250 focal length) can cut I-beams up to 400mm x 400mm in one pass, reducing the beveling process and improving efficiency.

## BLT5X0H Series Features

### L-Shape

#### Stronger Sealing

L shape cutting head can reduce the oscillation angle of the fiber, effectively extend the fiber life.



## BLT5X0H Series Features



### Collision Protection

#### Easy Maintenance

Replace it yourself and lower the cost to return it to the manufacture.



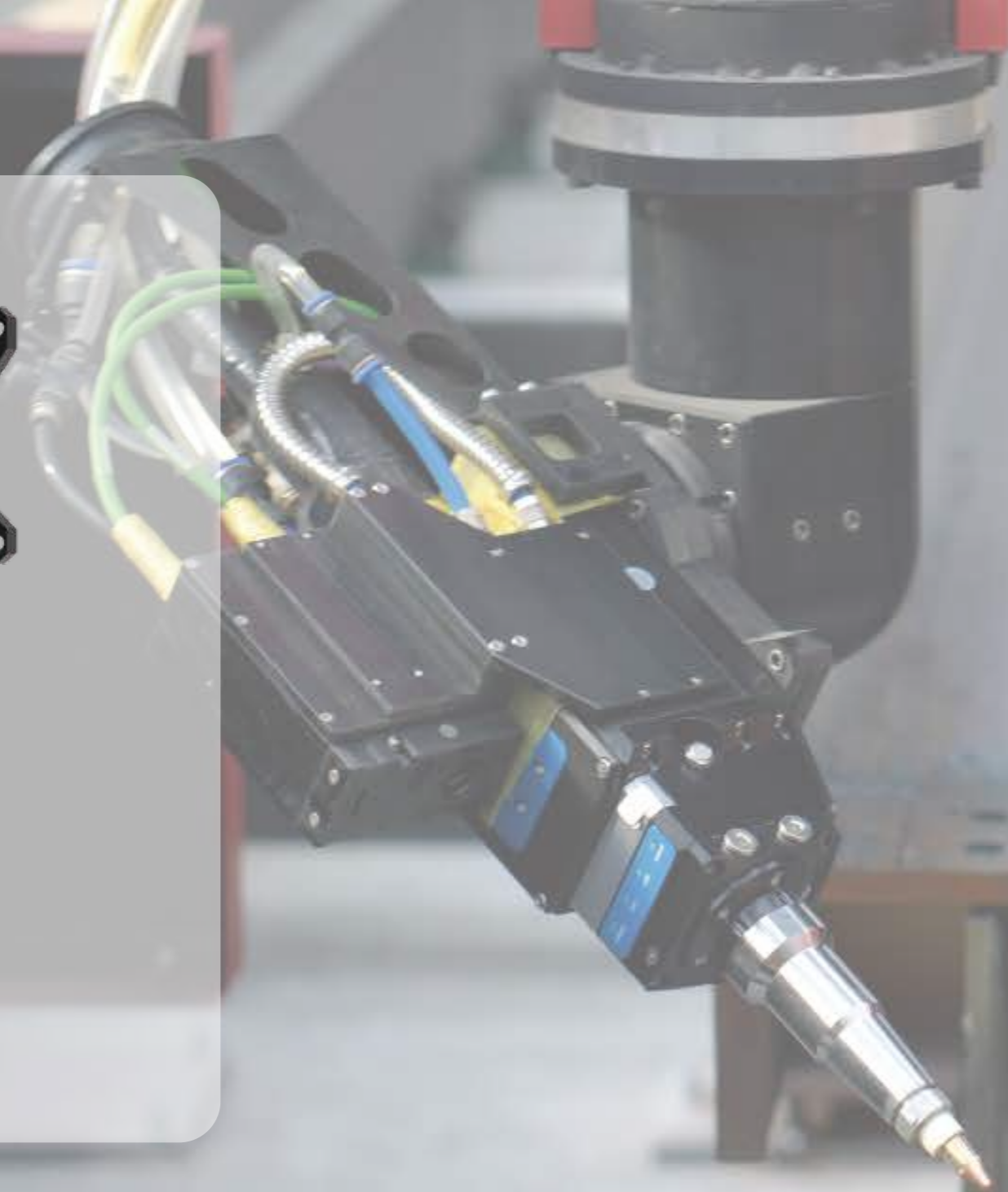
### Gas Pressure Monitoring

#### More Stable Cutting

Real-time monitor the gas output to reduce the impact on the cutting quality.



BLT4X1T Series



## Structural Steel Cutting Head

Function	Model	BLT4X1T Series	
		≤20kW	
Closed-Loop Monitoring		✓	
Fast Focusing		✓	
Built-In Amplifier		✓	
Protective Window Monitoring		✓	
Cutting Gas Pressure Monitoring		✓	
Collision Protection		✓	
Bottom Protective Cartridge Sealing		✓ *	
Pipe Bevel Cutting		✓	
Smart LaserOff		✓	

\* BLT421 does not contain Bottom Protective Cartridge Sealing.

# BLT4X1T Series

## Structural Steel

Focus Range: ±50mm

Reposition Precision: ±0.01mm

Focus Speed: 500mm/s

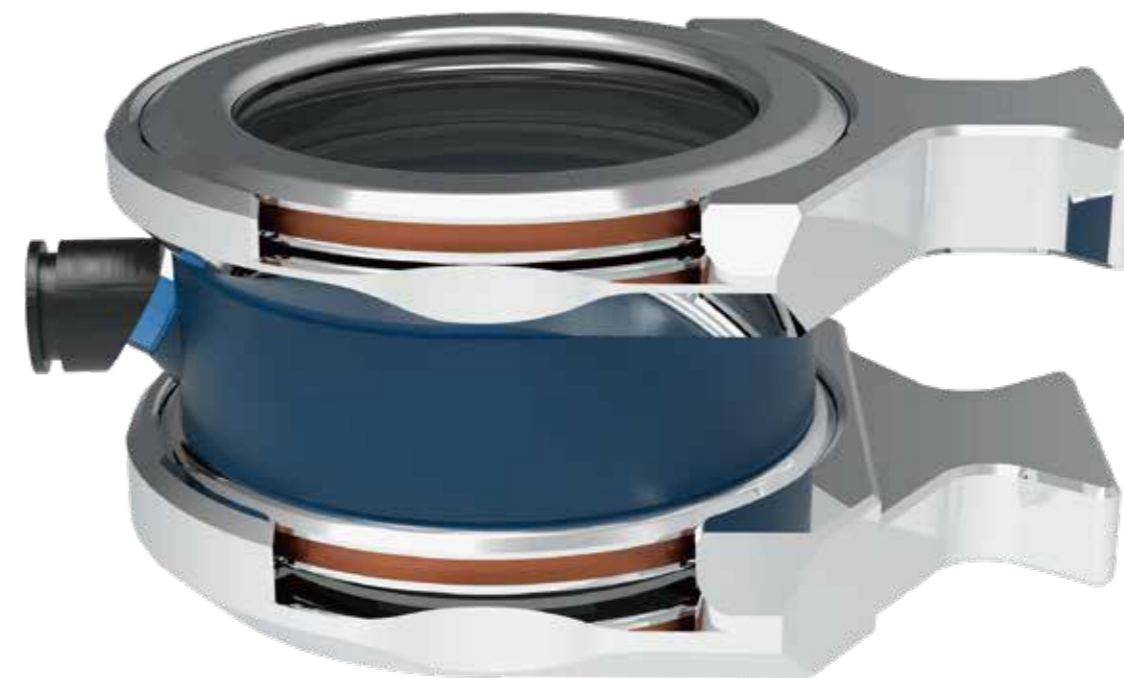
Max Gas Pressure: 25Bar

Laser Wavelength: 1030-1090nm



Cutter Model	BLT441T Series	BLT461T Series
Support Power Range	≤12kw	≤20kw
Fiber Interface	QBH、Q+、QD、ADD	
Focal Length (mm)	200、250	250

## BLT4X1T Features



### Bottom Protective Cartridge Sealing

Protect the Protective Windows

Monitor the sealing of the protective windows cartridge for stable production.

## BLT4X1T Features ///

### Dust-proof Cover

#### Stronger Sealing ///

Added to optics cartridge to extend the lifespan of focusing and collimating lens.



### 4 Sets of Protective Windows

#### Extend Core Lens Lifespan ///

Protect the focusing and collimating lens and improve the cartridge sealing.



## BLT4X1T Features ///



### Built-In Amplifier

#### More Stable Capacity ///

Enhance the anti-interference capability.

### Collision Protection

#### Easy Maintenance ///

Replace it yourself and lower the cost to return it to the manufacture.



### Three-Dimensional Sensing Head

#### Multi-Type Pipe Cutting ///

Can achieve cutting of different types of pipes. Round pipe, square pipe, channel steel and I-beam etc.



# Applications



# ***BOCI***

## ***Intelligent Laser Cutting Head***

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Bring you intelligent manufacturing

