BLT Intelligent Laser Cutting Head

Product Brochure

BOCHU | BOCI

Shanghai BOCHU Electronic Technology Co., Ltd.

No.1000,South Lanxianghu Road,Minhang District,Shanghai City,China

Hotline : +86(21)64309023
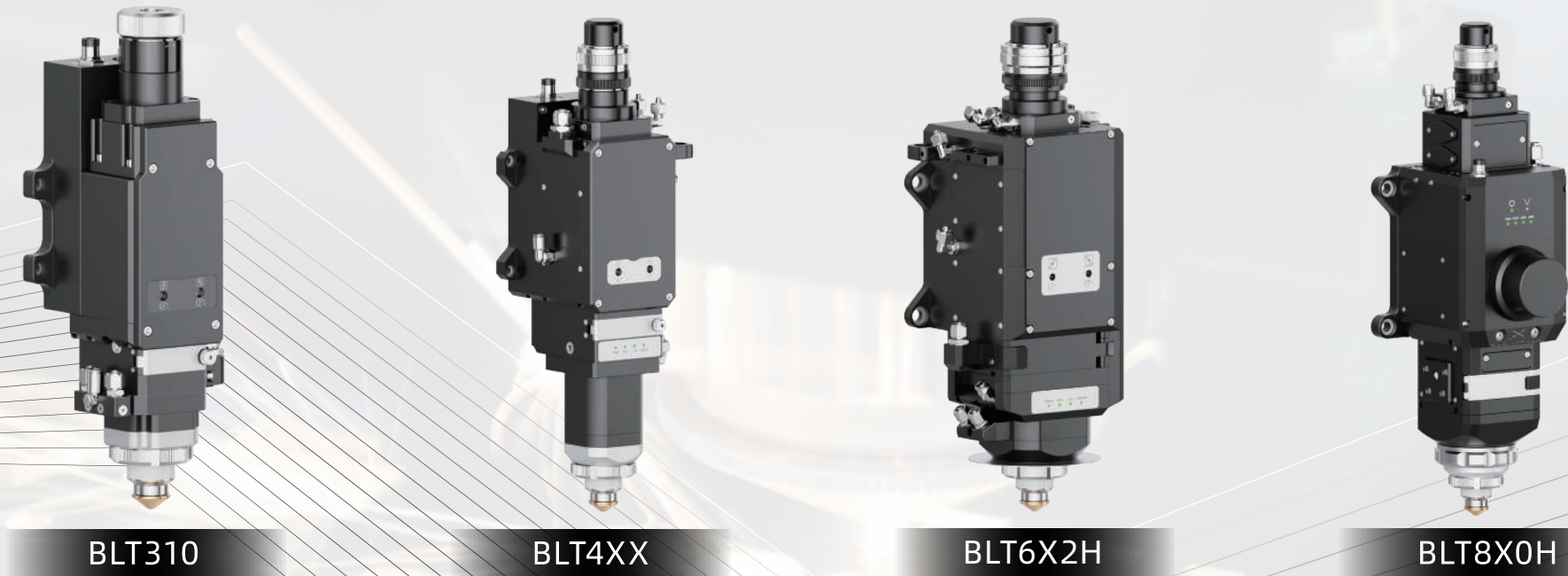
Fax : +86(21)64308817

Web : www.bochu.com

BLT310

BLT4XX

BLT6X2H

BLT8X0H

BLT6X2MA

BLT9X0MA

BLTA180M

2D Laser Cutting Head Catalog
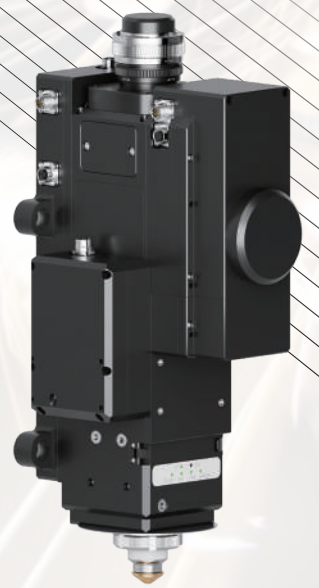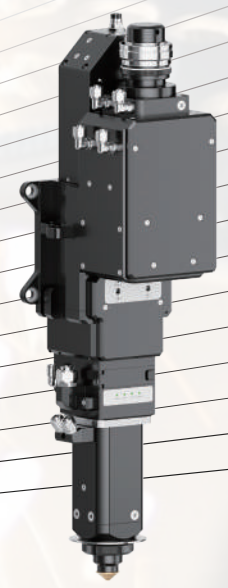
Function \ Model	BLT310	BLT4XX Series	BLT6X2H Series	BLT8X0H Series	BLT6X2M Series	BLT9X0MA Series	BLTA180M
	≤4kW	≤40kW	≤60kW	≤20kW	≤40kW	≤40kW	≤120kW
Collision Protection	✓	✓	✓	✓	✓	✓	✓
Protective Window Monitoring	✓	✓	✓	✓	✓	✓	✓
Bottom Stray Light Monitoring		✓*	✓	✓	✓	✓	✓
Closed-Loop Monitoring	✓	✓	✓	✓	✓	✓	✓
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
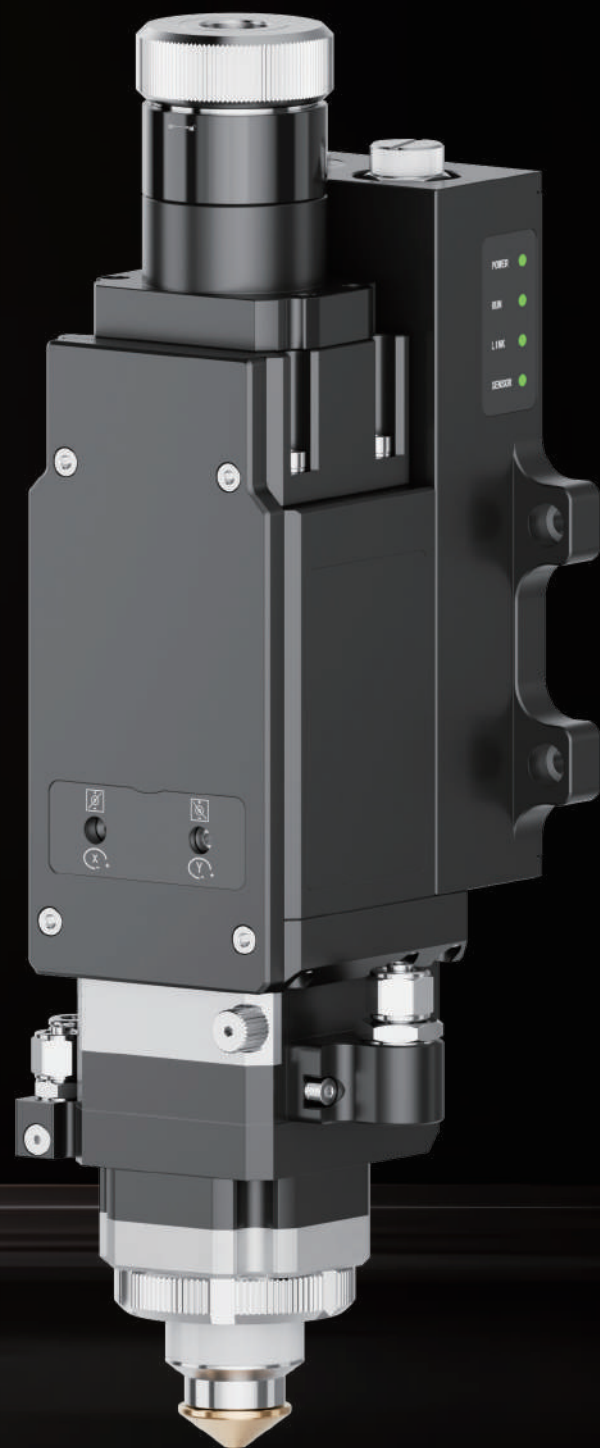
BLT310
2D Laser Cutting

Focus Range：±40mm

Reposition Precision：±0.01mm

Focus Speed：300mm/s

Max Gas Pressure：25Bar

Laser Wavelength：1030-1090nm

Cutter Model	BLT310 Series
Support Power Range	≤4kW
Fiber Interface	QBH、EOC
Focal Length (mm)	150、200

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 blockages 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.
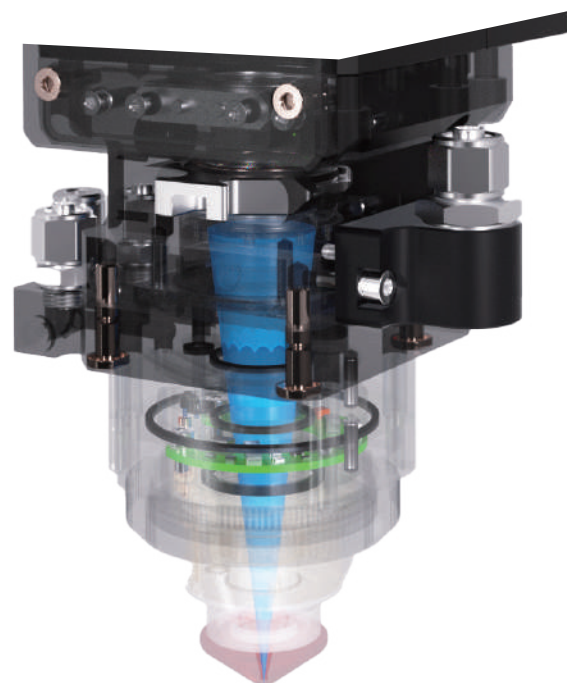
Gas Pressure Monitoring Sensor
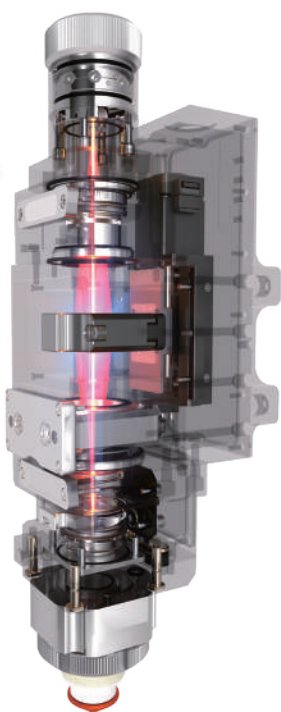
More Stable Cutting

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

Fast Focusing

Higher Efficiency

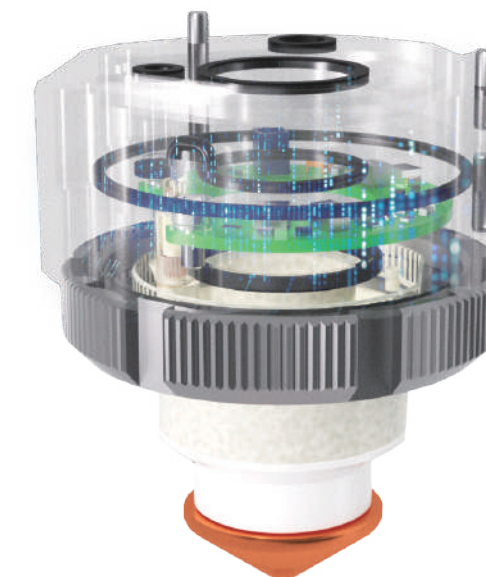Focal position vertically adjusted by collimating lens, realizing higher efficiency.
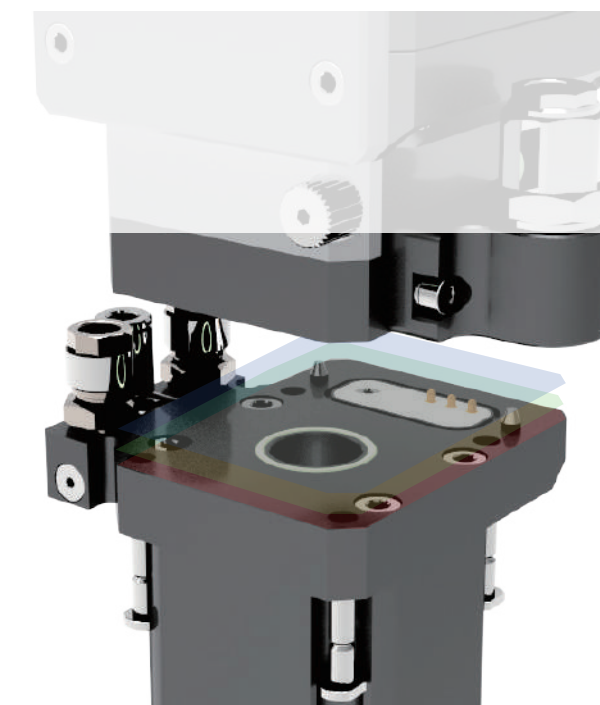
Amplifier Sensor

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
2D/ Bevel Laser Cutting

Focus Range：±50mm

Reposition Precision：±0.01mm

Focus Speed：500mm/s

Max Gas Pressure：25Bar

Laser Wavelength：1030-1090nm

Cutter Model	BLT421/BLT421S Series	BLT441 Series	BLT462 Series	BLT482 Series	BLT4102 Series
Support Power Range	≤8kW	≤15kW	≤20kW	≤30kW	≤40kW
Fiber Interface	QBH、EOC	Q+、QD、QBH、ADD			
Focal Length (mm)	150、200	200	200	200、300	300

Collision Protection

Simpler Maintenance

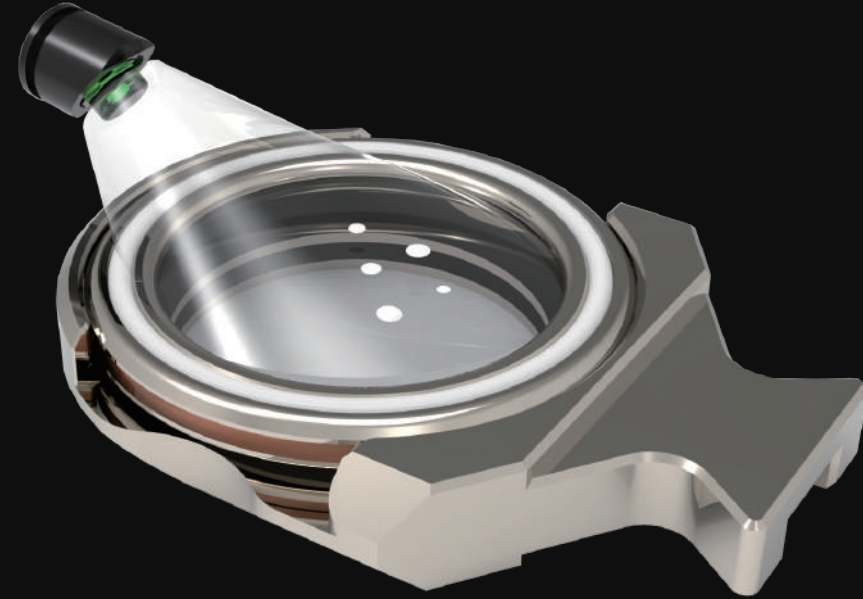Protective Screws keep cutting head from damage.
No time wasting on Depot Repair.

Protective Window Monitoring
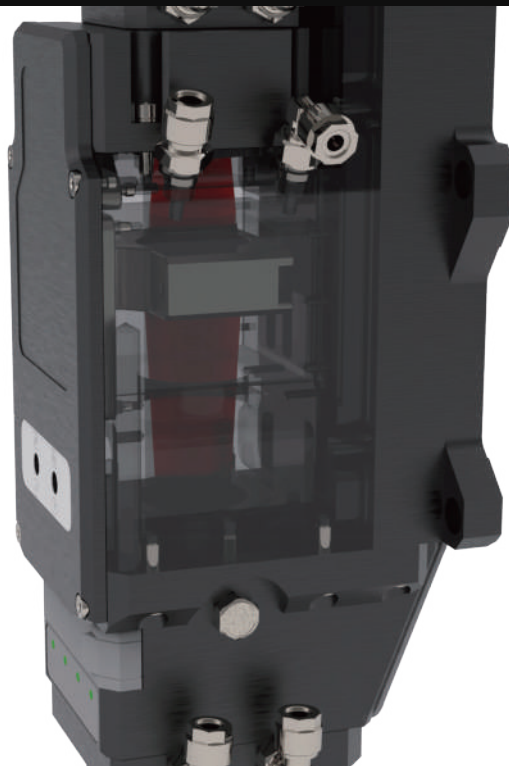
Improve Cutting Quality

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.

Bevel Cutting

One Time Forming

With AB swing axis can support cutting V, Y, X and other types of bevels, maximum ±45°[1] bevel and one time forming, reducing beveling process, reducing cost and increasing efficiency.

Water Cooling

Full Body Water Cooling

Cover 90%[2] of the cutting head to improve cutting stability.

Closed-Loop Monitoring

Smarter and More Efficient

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

Gas Pressure Monitoring

More Stable Cutting

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

[1,2]Data referred to in the video is from BOCHU laboratory, actual results may be affected by factors.

BLT6X2H Series

2D Laser Cutting

Focus Range：±50mm

Reposition Precision：±0.01mm
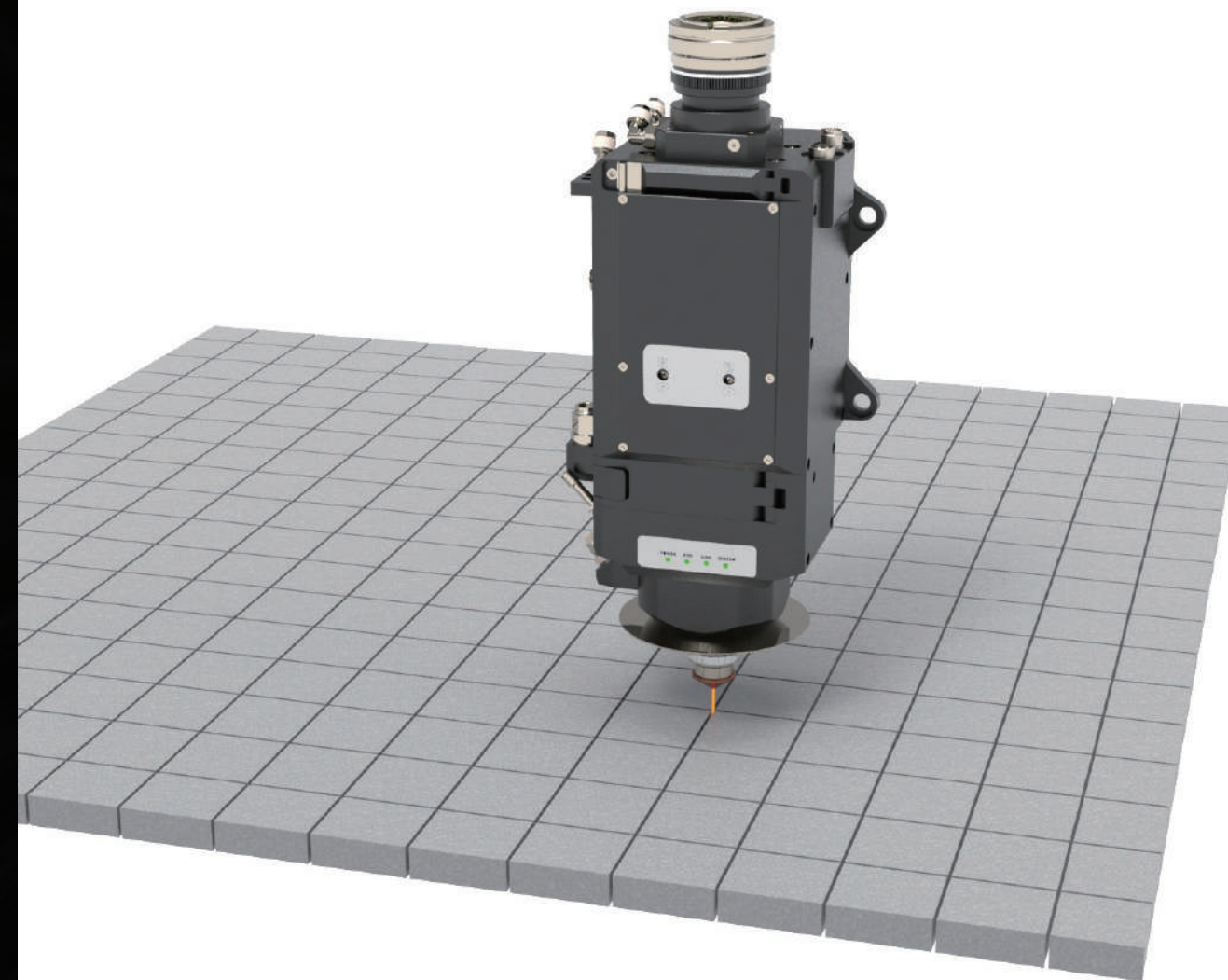
Focus Speed：500mm/s

Max Gas Pressure：25Bar

Laser Wavelength：1030-1090nm

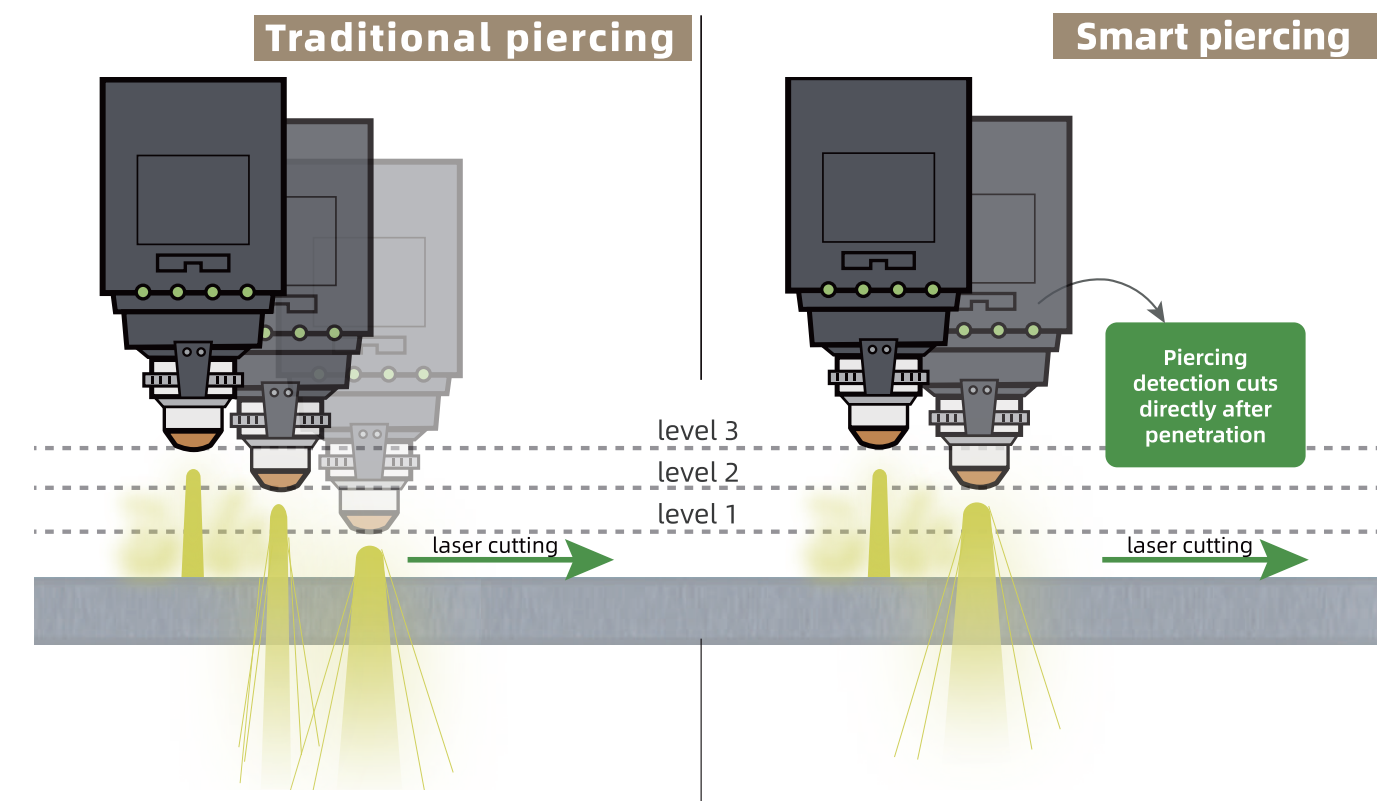| Cutter Model	BLT642H Series	BLT662H Series	BLT682H Series	BLT6102H Series	BLT6120H Series
Support Power Range	≤15kW	≤20kW	≤30kW	≤40kW	≤60kW
Fiber Interface	Q+、QD、QBH、ADD				
Focal Length (mm)	200	200	200、300	300、400	300

Co-edge Piercing Monitoring

Improve Cutting Efficiency

Detect whether piercing is required at co-edged positions.

Smart Piercing

Enhance Piercing Efficiency

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

Traditional piercing

Smart piercing

Piercing detection cuts directly after penetration

level 3
level 2
level 1

laser cutting

laser cutting

Auto ReCut

Stable and Efficient Cutting

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

Automatic retreat when the board is not cut through
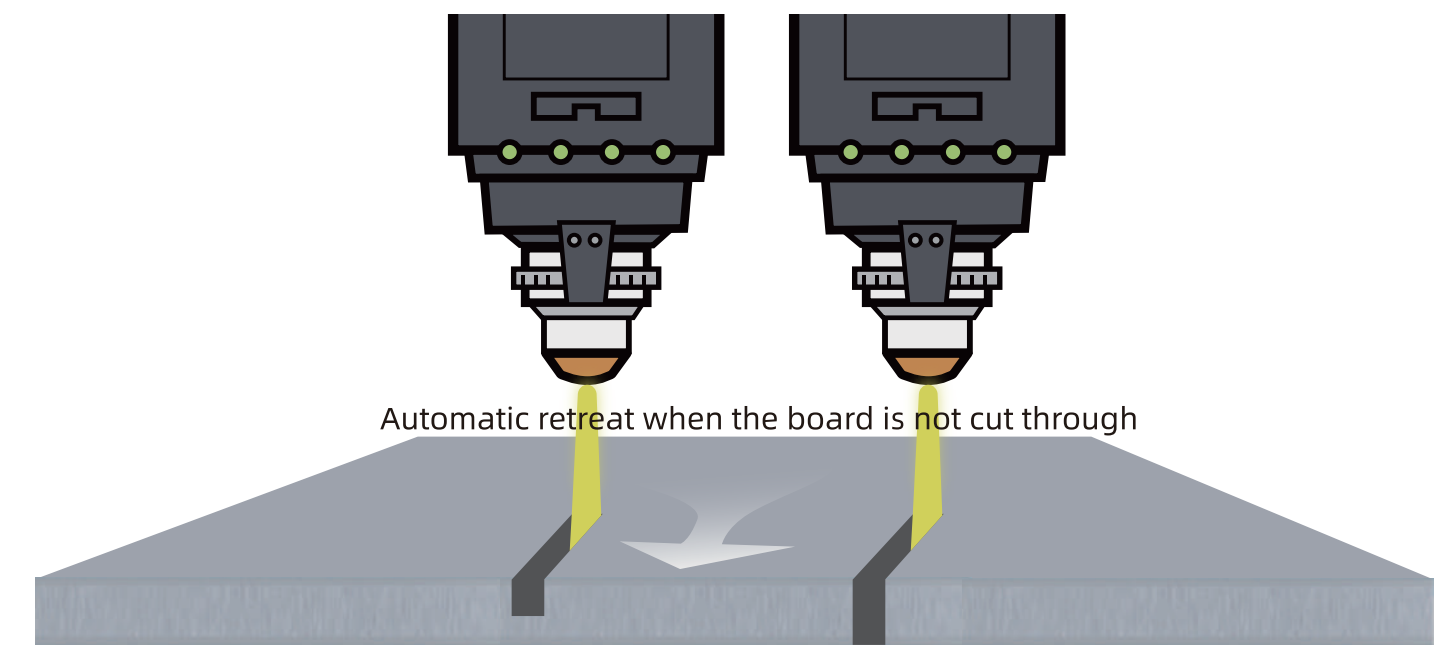
Stray Light Monitoring

Easy Troubleshooting

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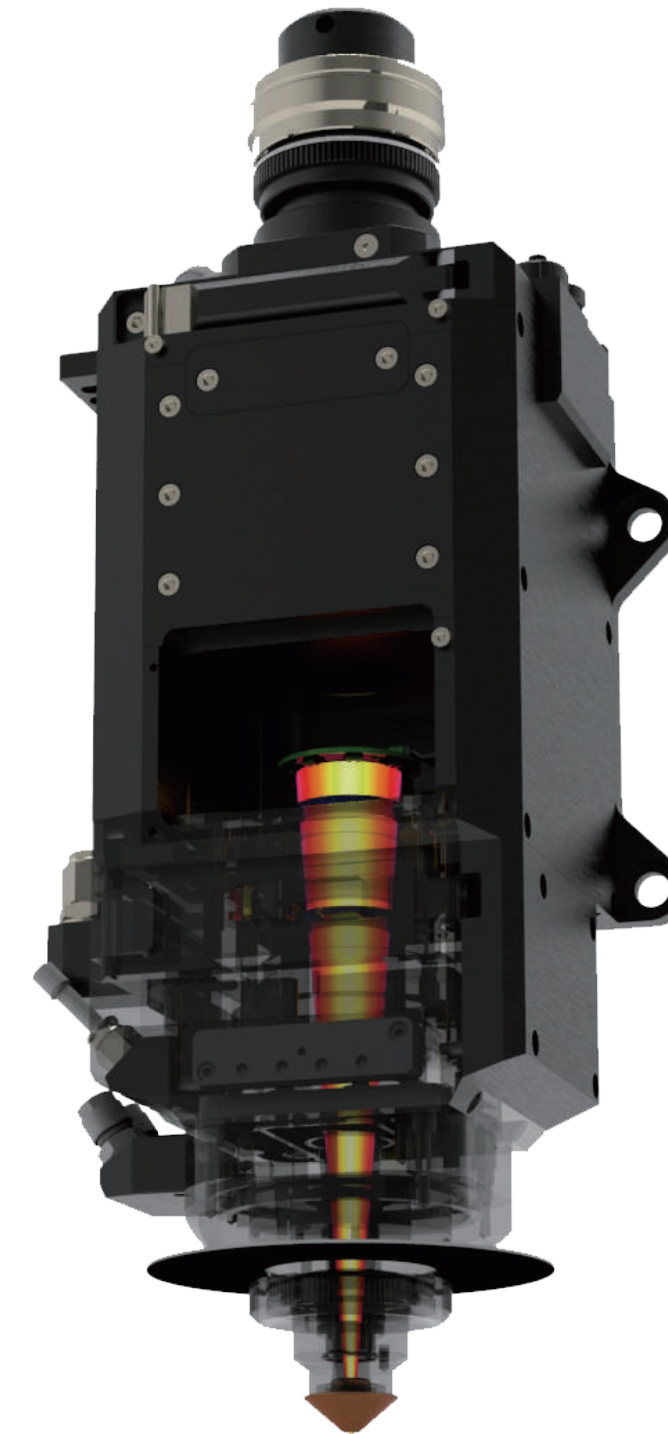and to prevent poor cutting.

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 Energy Distribution

Focus Range: ±50mm

Reposition Precision: ±0.01mm

Focus Speed: 500mm/s

Max Gas Pressure: 25Bar
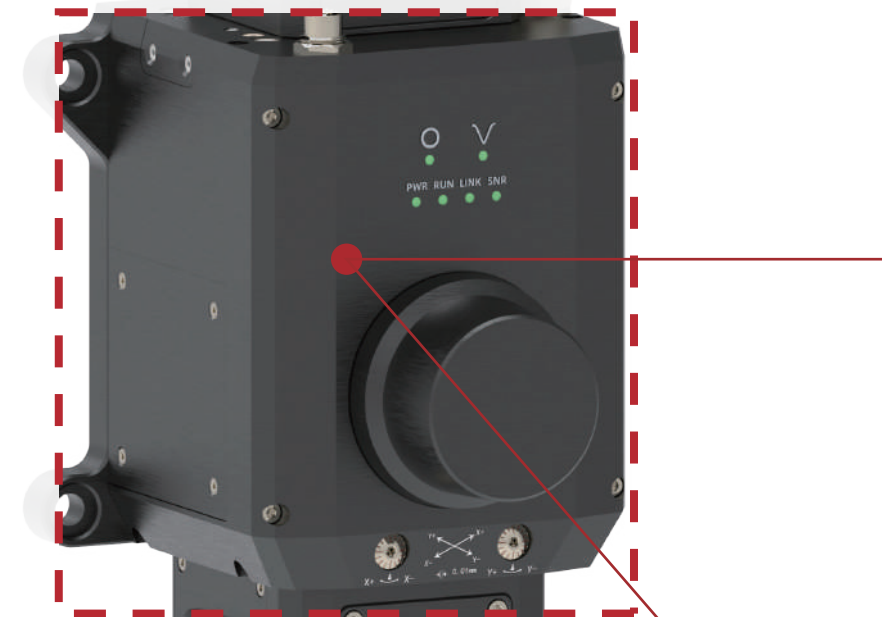
Laser Wavelength: 1030-1090nm

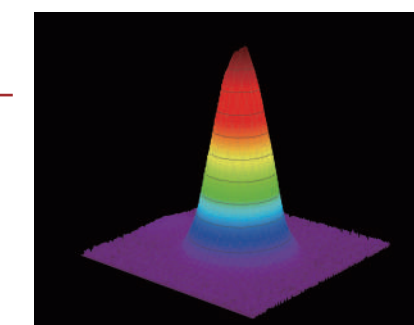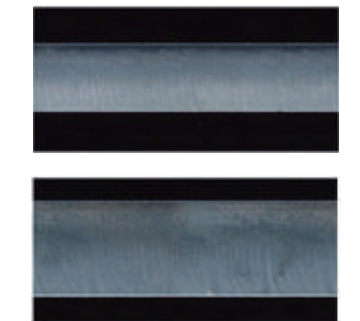| Cutter Model	BLT840H Series	BLT860H Series
Support Power Range	≤15kW	≤20kW
Fiber Interface	Q+、QD	
Focal Length (mm)	200	
Variable Beam Shape	Gaussian Distribution/Homogeneous Distribution	

BLT8X0H Series Features

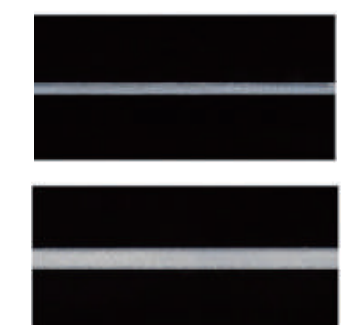# Variable Energy Distribution

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.
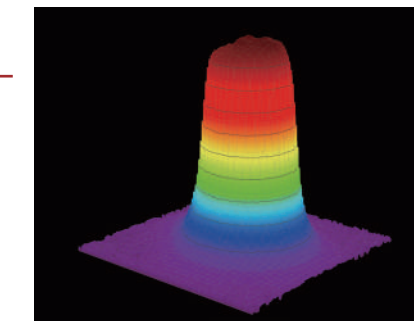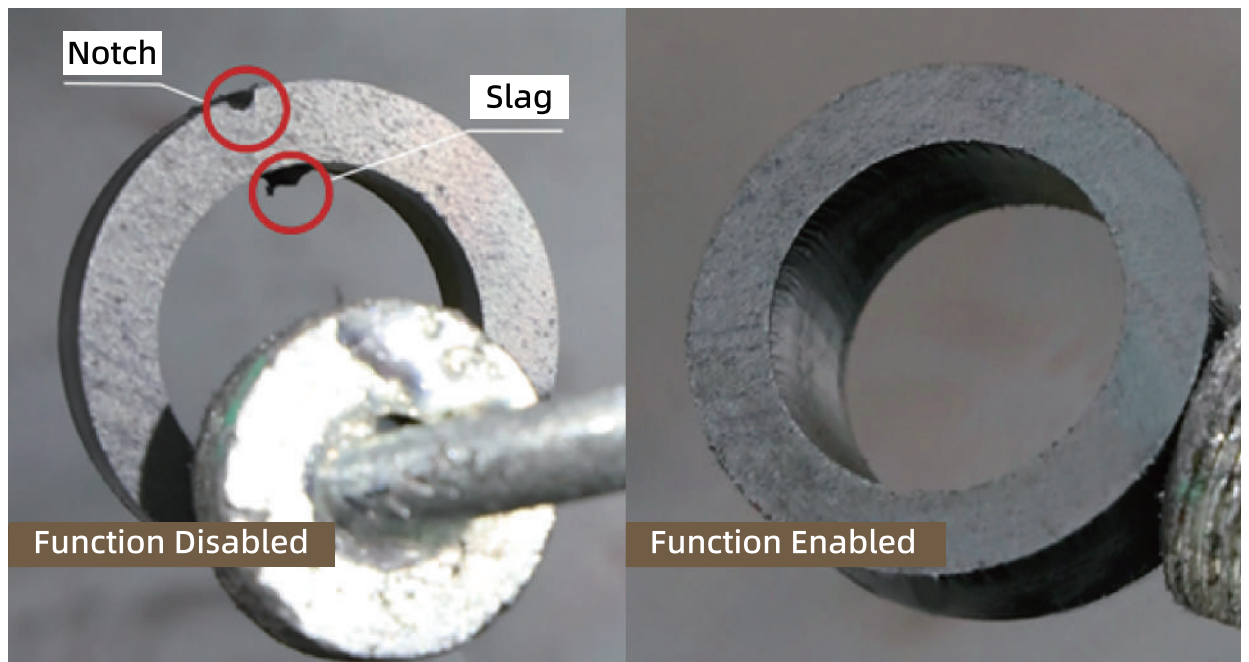
Homogeneous
"Flat Top" distribution

Gaussian distribution

Smart LaserOff

Improve Cutting Quality

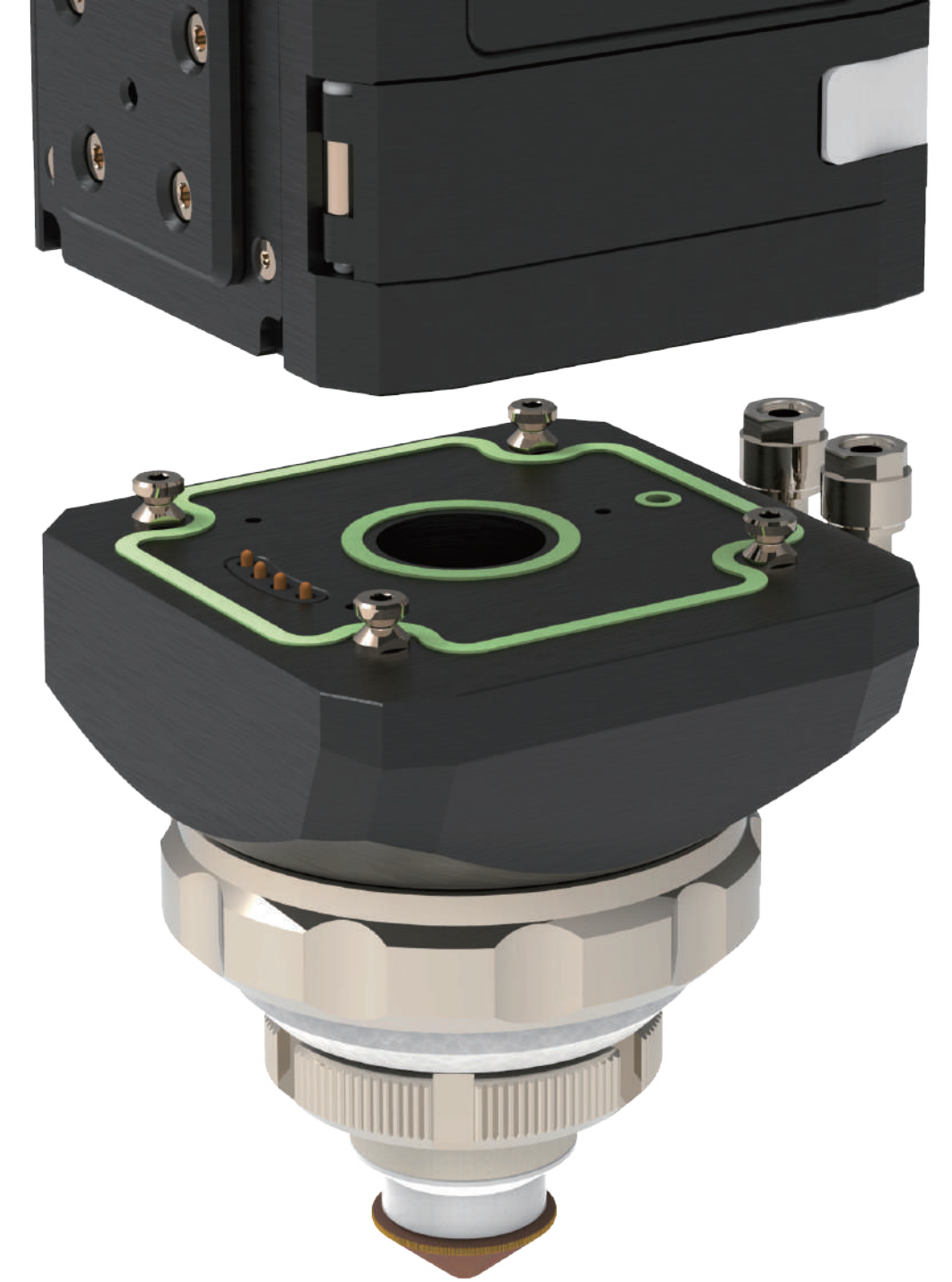Section and surface finish of inner and outer contours of parts are smooth without slag.

Notch

Slag

Function Disabled

Function Enabled

Collision Protection

Simpler Maintenance

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

BLT6X2MA Series
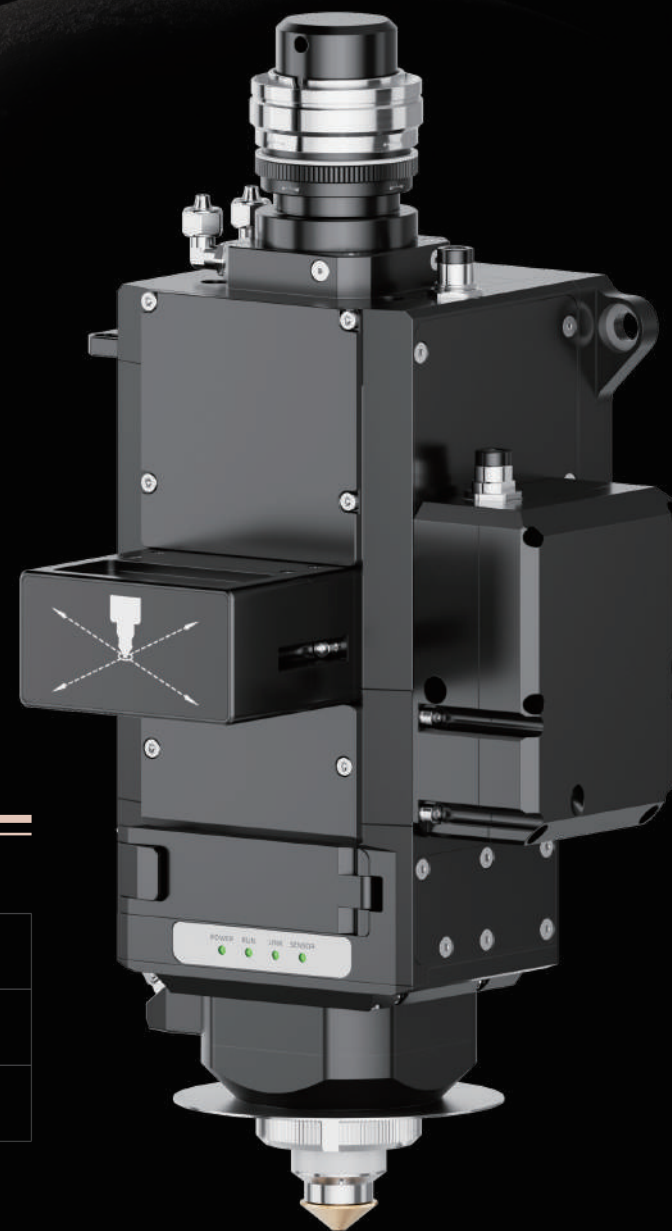## Cutting Path Monitoring

Focus Range：±50mm

Reposition Precision：±0.01mm

Focus Speed：500mm/s

Max Gas Pressure：25Bar

Laser Wavelength：1030-1090nm

Cutter Model	BLT662MA Series	BLT682MA Series	BLT6102MA 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.
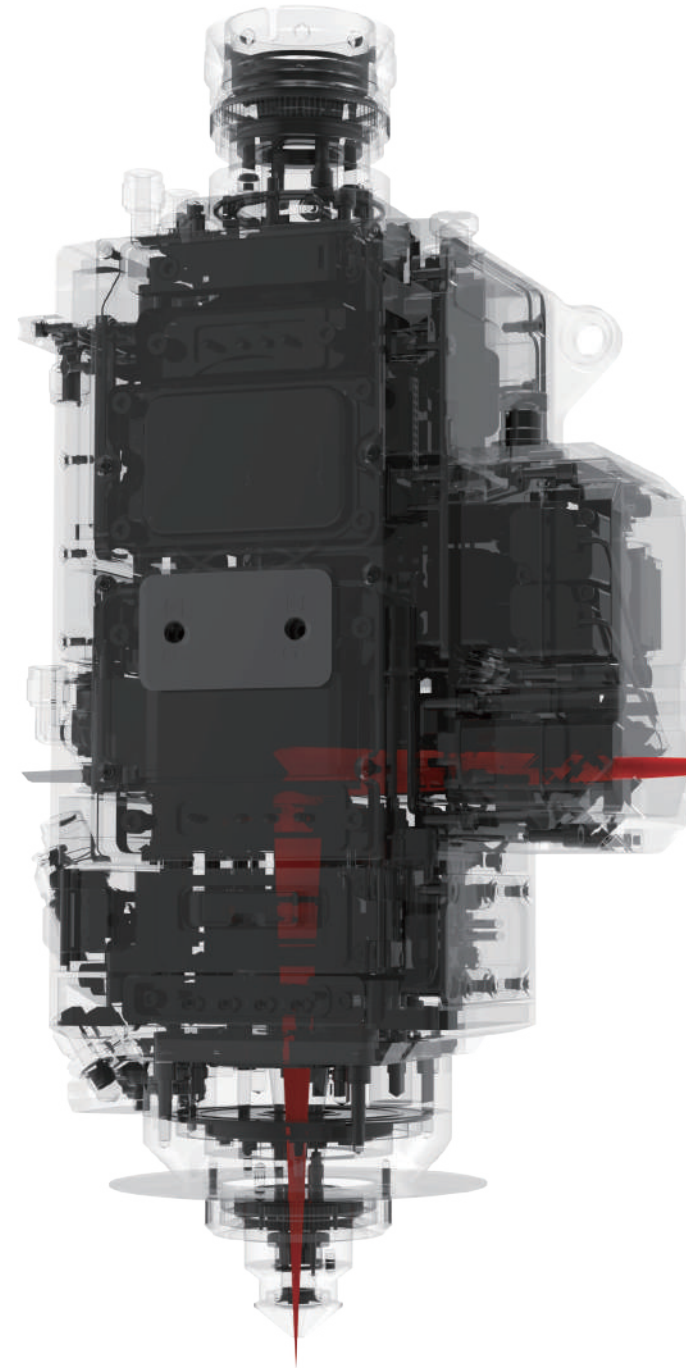

Molten pool Width Closed-loop Control

Width: 0.92mm Width: 0.91mm Width: 0.91mm

Molten pool Width Closed-loop Control

Width: 0.93mm Width: 0.88mm Width: 0.82mm

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.

BLT9X0MA Series
Variable Beam Shape

Focus Range: +70~-150(mm)

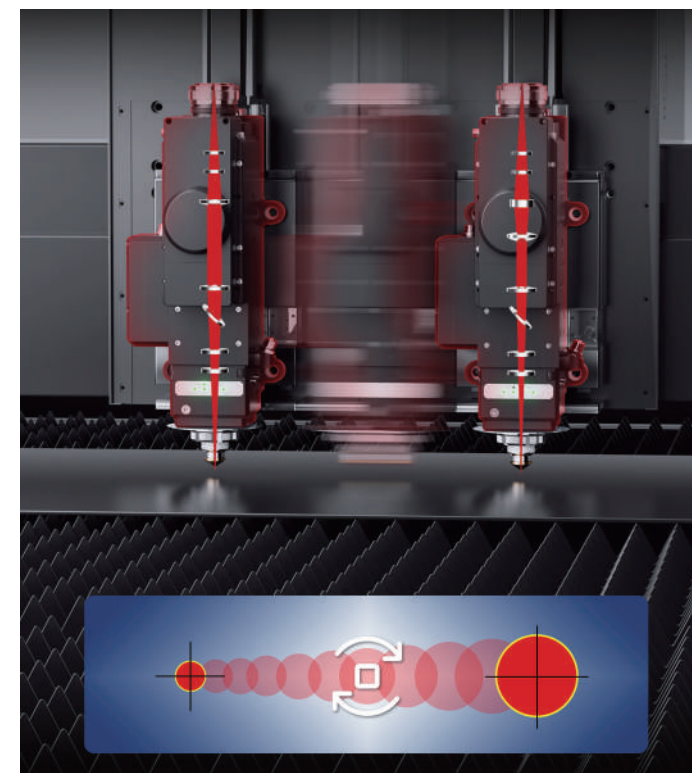Reposition Precision: ±0.01mm

Focus Speed: 500mm/s

Max Gas Pressure: 25Bar

Laser Wavelength: 1030-1090nm

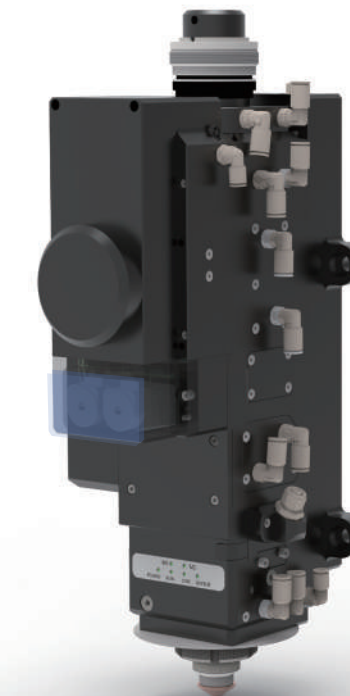| Cutter Model	BLT9100MA
Support Power Range	≤40kW
Fiber Interface	Q+、ADD
Focal Length (mm)	200 & 400
Variable Beam Shape	M=2.0/M=4.0

BLT9X0MA Series Features

Variable Focus Point Size

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.
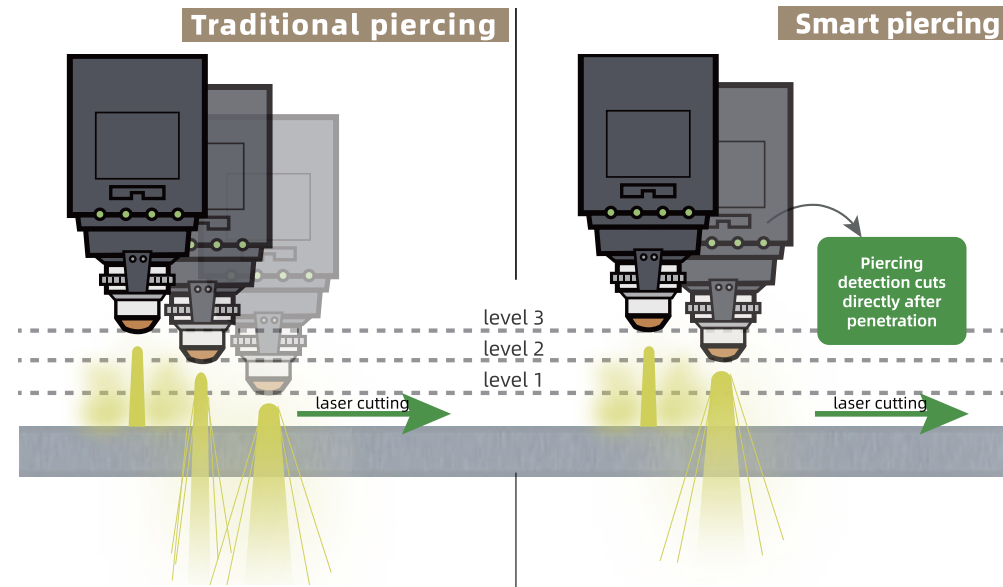
Auto Centering

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.
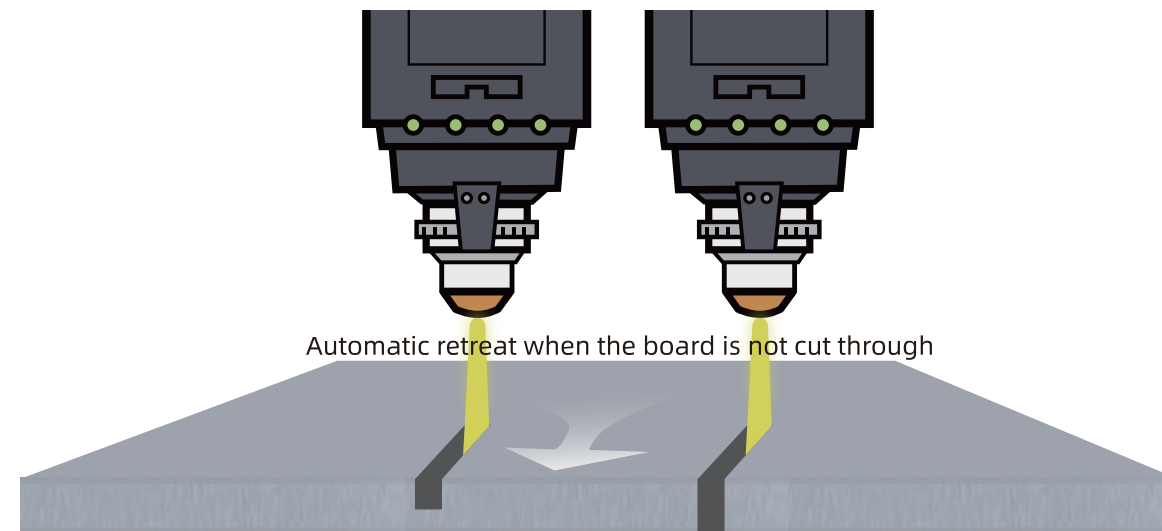
Smart Piercing

Enhance Piercing Efficiency

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

Traditional piercing

Smart piercing

Piercing detection cuts directly after penetration

level 3
level 2
level 1

laser cutting

laser cutting

Auto ReCut

Stable and Efficient Cutting

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

Automatic retreat when the board is not cut through
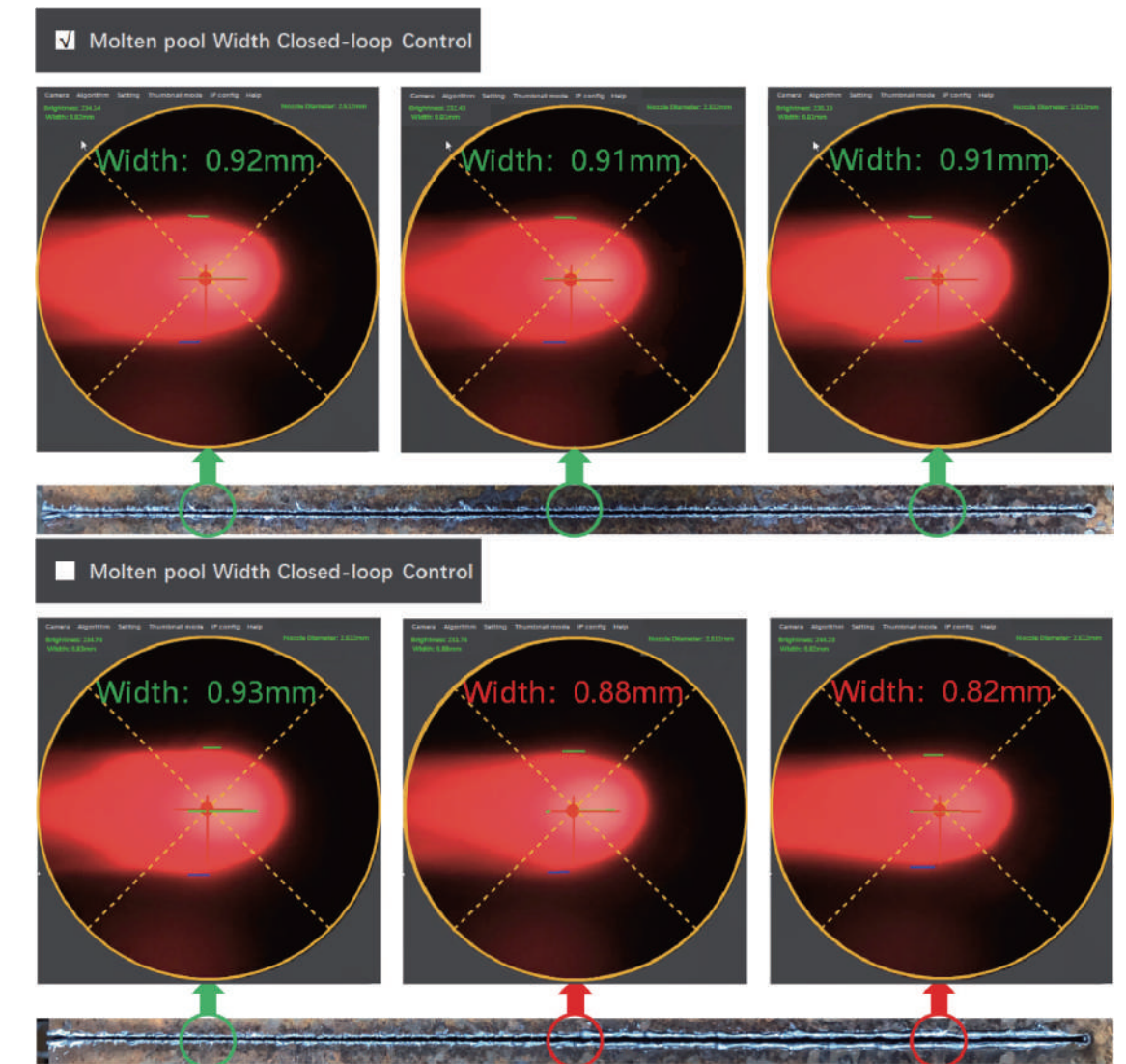
Cutting Path Monitoring

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.

☑ Molten pool Width Closed-loop Control

Width: 0.92mm

Width: 0.91mm

Width: 0.91mm

☐ Molten pool Width Closed-loop Control

Width: 0.93mm

Width: 0.88mm

Width: 0.82mm

BLTA180M
Ultrahigh Power

Focus Range: +70~-100(mm)

Focus Speed: 500mm/s

Laser Wavelength: 1030-1090nm

Reposition Precision: ±0.01mm

Max Gas Pressure: 25Bar

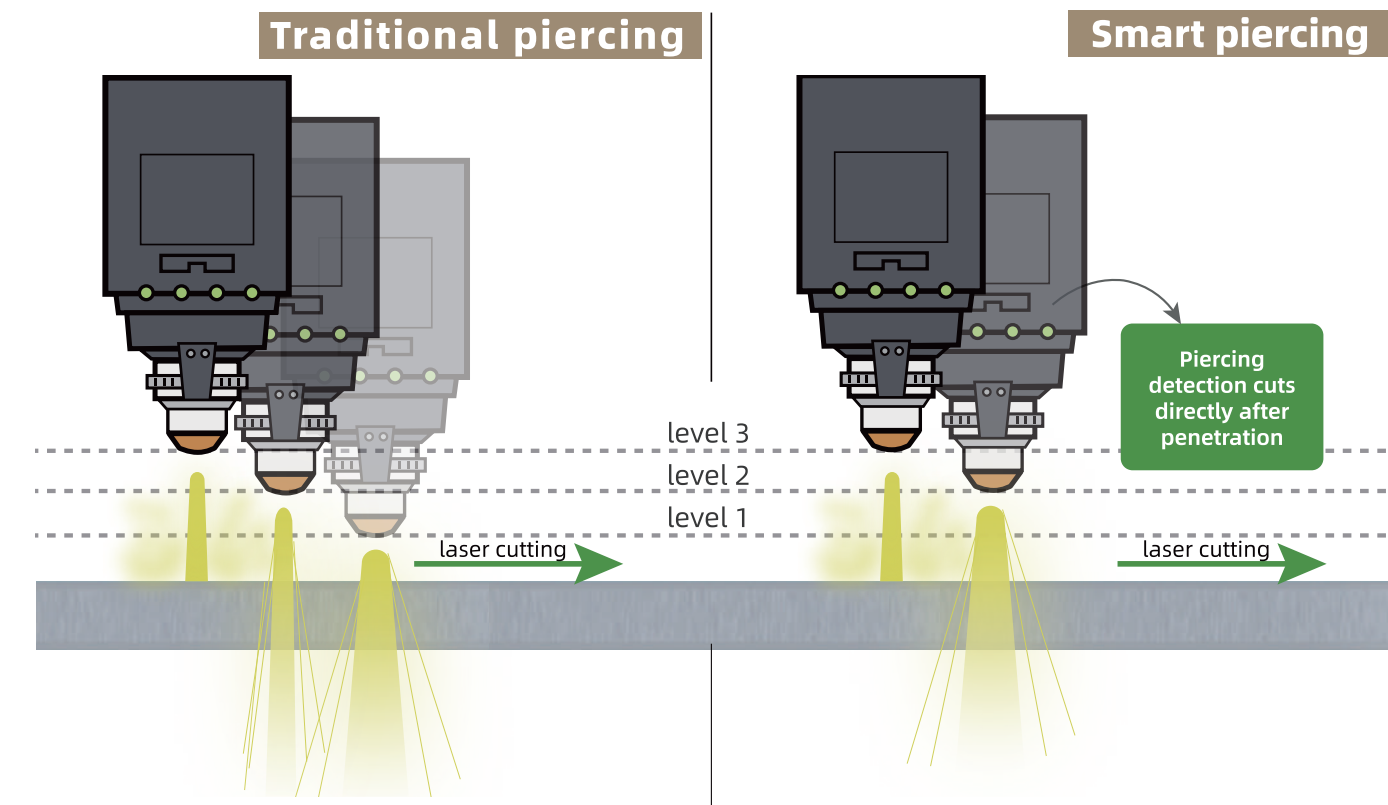| Cutter Model	BLTA180M
Support Power Range	≤120kW
Fiber Interface	Q+、ADD
Focal Length (mm)	300

Smart Piercing

Enhance Piercing Efficiency

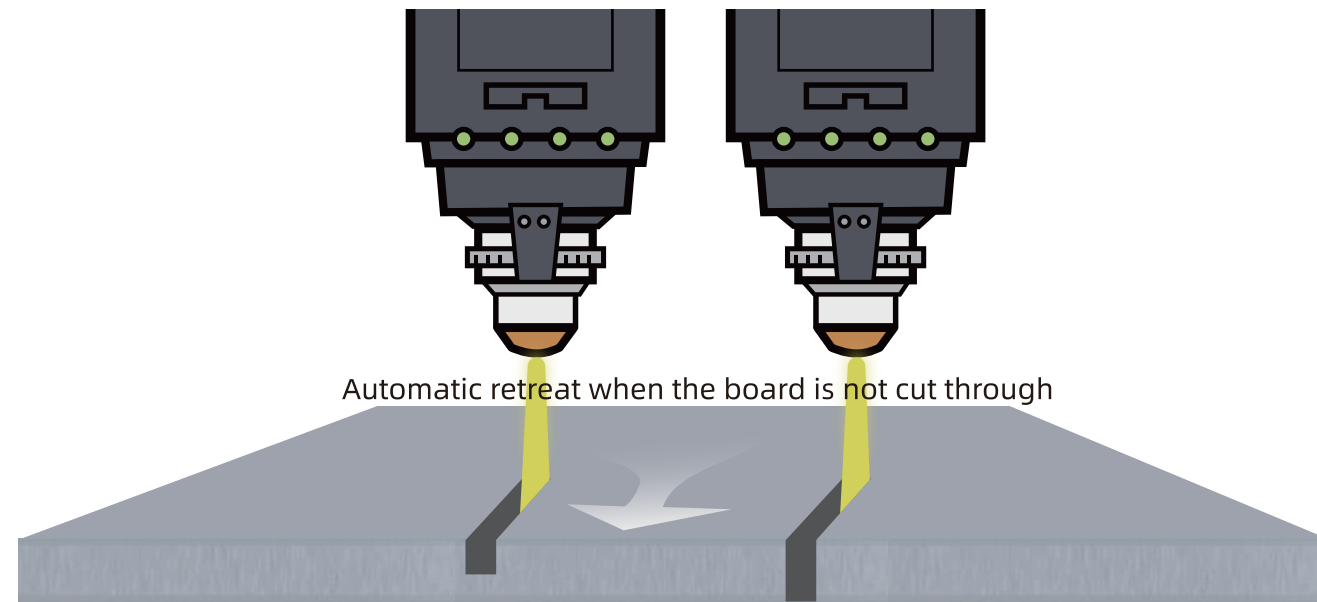Monitor the piercing and cut immediately after piercing to improve the efficiency and reduce costs.

Traditional piercing

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level 3
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laser cutting

laser cutting

Auto ReCut

Stable and Efficient Cutting

If an part is not cut through, the cutting head will return and cut it again.
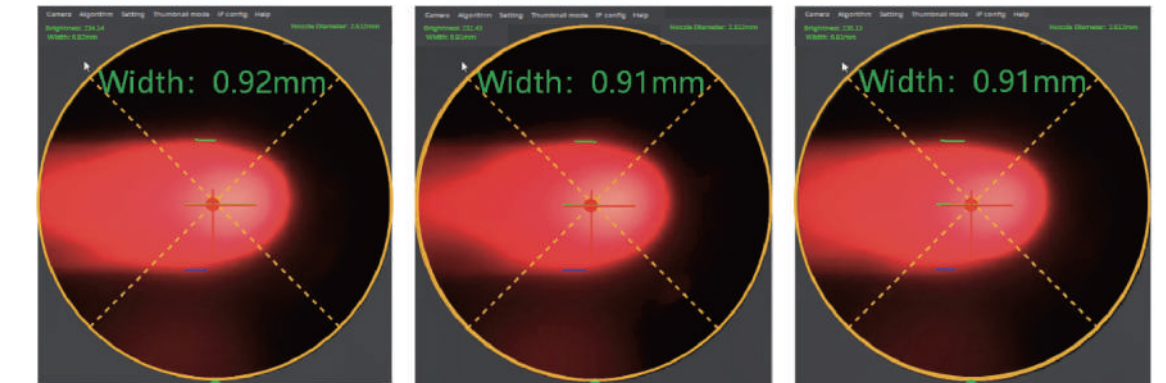
Automatic retreat when the board is not cut through

Cutting Path Monitoring

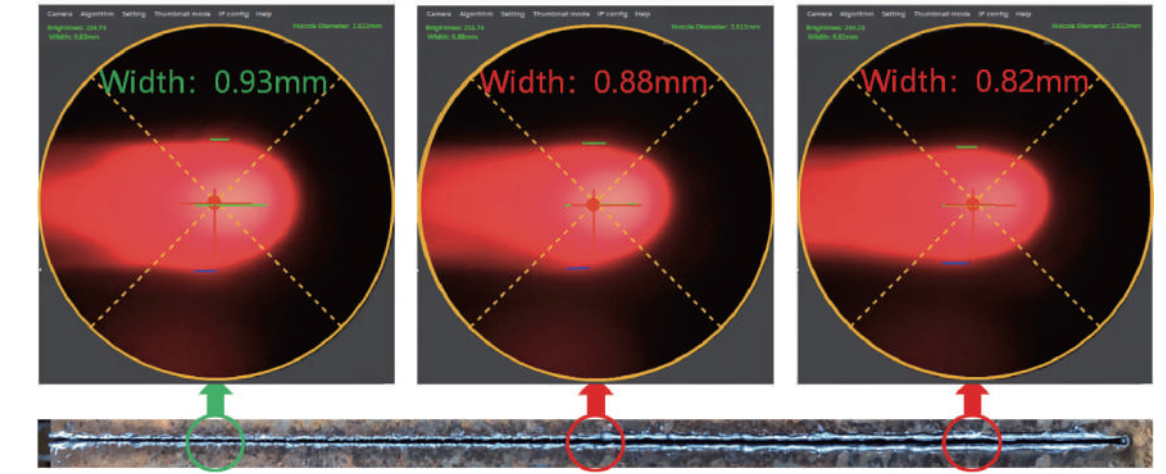### More Stable Cutting

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.
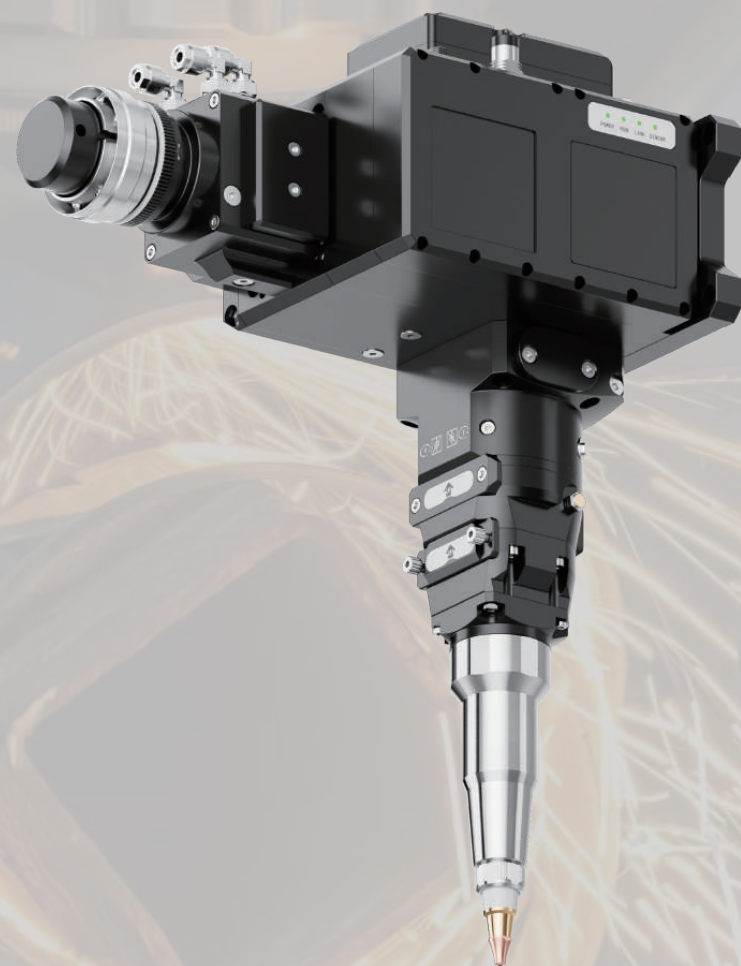
☑ Molten pool Width Closed-loop Control

Width: 0.92mm Width: 0.91mm Width: 0.91mm

☐ Molten pool Width Closed-loop Control

Width: 0.93mm Width: 0.88mm Width: 0.82mm

BLT5X0H Series

BLT4X1T Series

BLT310T

Tube Laser Cutting Head Catalog

Function \ Model	BLT310T	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
Tube Laser Cutting

Focus Range：±60mm

Reposition Precision：±0.01mm

Focus Speed：300mm/s

Max Gas Pressure：25Bar

Laser Wavelength：1030-1090nm

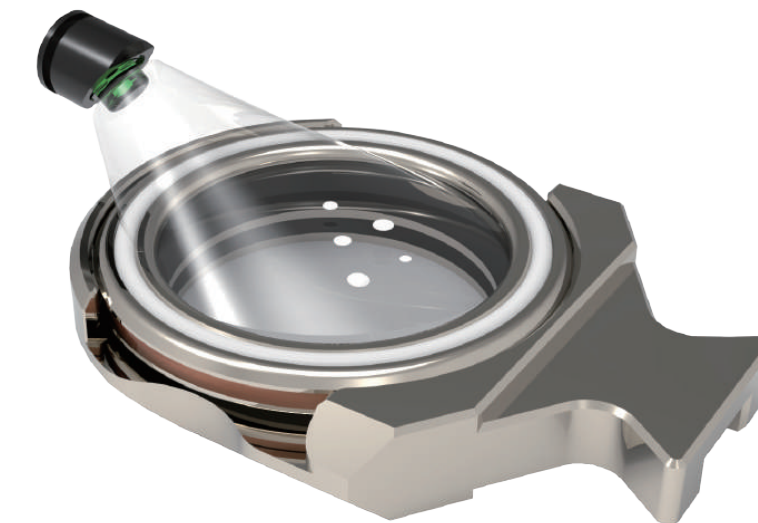| Cutter Model	BLT310T Series
Support Power Range	≤4kW
Fiber Interface	QBH、EOC
Focal Length (mm)	200、250

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.
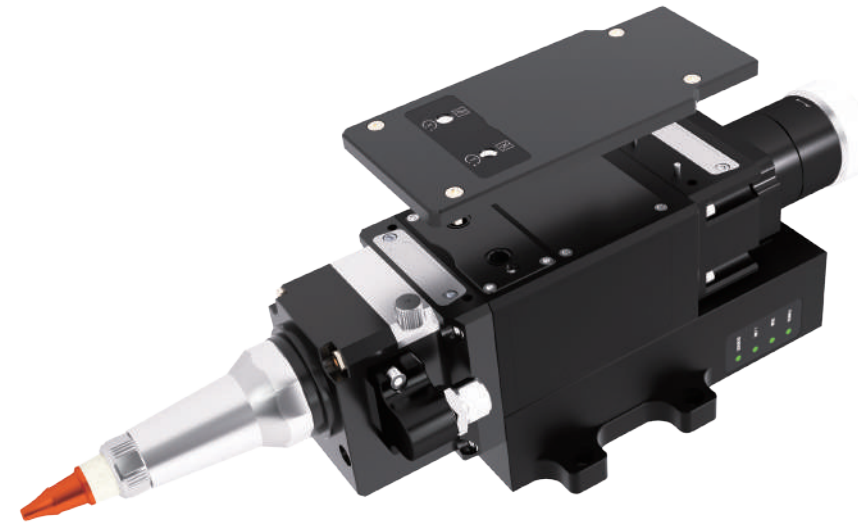
Front Cover Plate

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.

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
Tube Laser Cutting

Focus Range：±50mm

Reposition Precision：±0.01mm

Focus Speed：500mm/s

Max Gas Pressure：25Bar

Laser Wavelength：1030~1090nm

Cutter Model	421T/421TS Series	BLT441T Series	BLT461T Series
Support Power Range	≤8kW	≤15kW	≤20kW
Fiber Interface	QBH、EOC	QBH、Q+、QD、ADD	
Focal Length (mm)	200、250	200、250	250

BLT4X1T Series Features

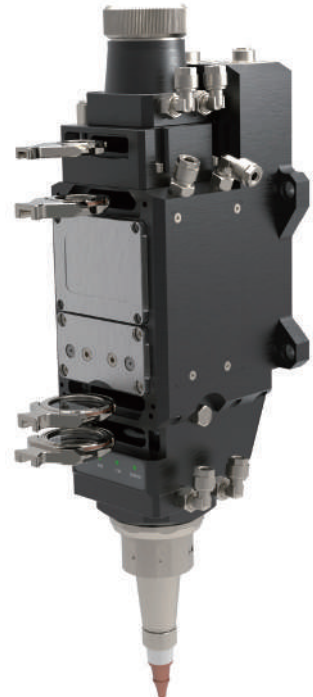## Bottom Protective Cartridge Sealing

Protect the Protective Windows

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

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.

Built-In Amplifier

More Stable Capacity

Enhance the anti-interference capability.

Collision Protection
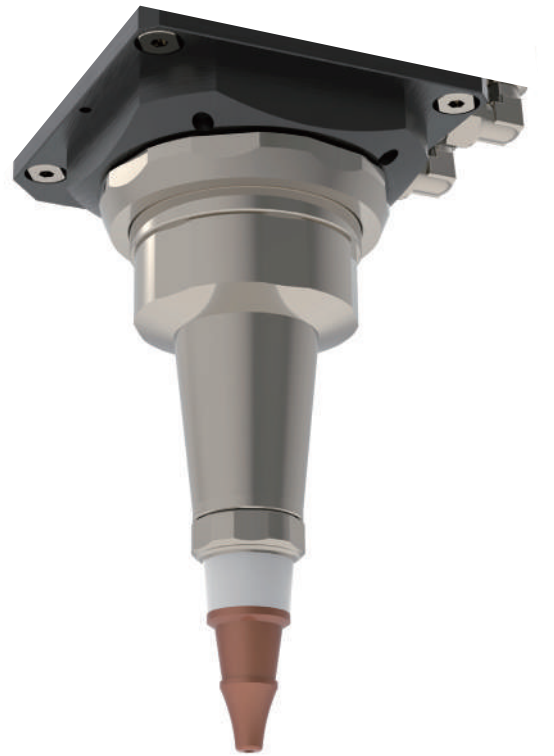
Easy Maintenance

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

3D Sensing Head

Multi-Type Pipe Cutting

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

BLT5X0H Series
Tube/Bevel Laser cutting

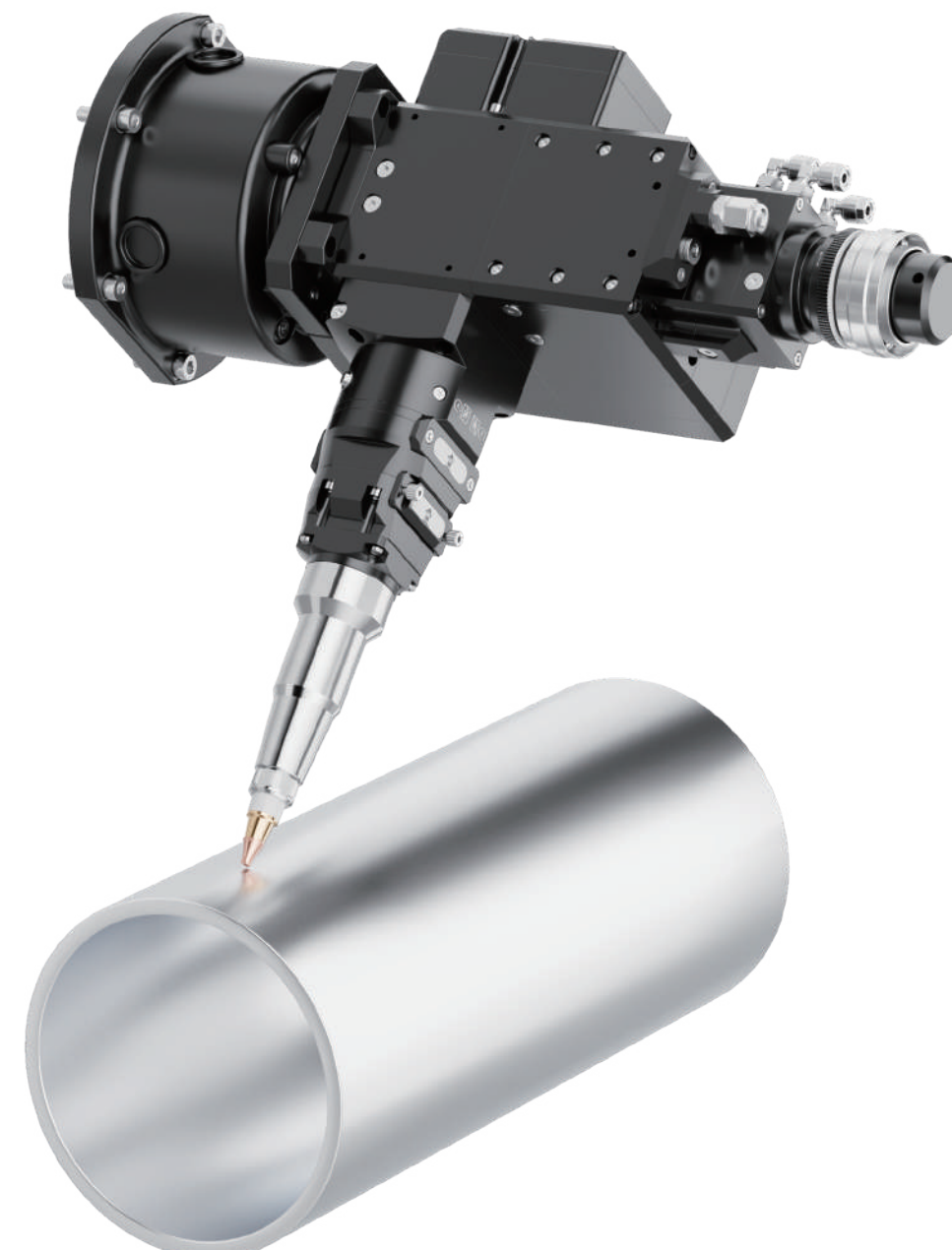Focus Range：±50mm

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 B LT5X0H (250 focal length) can cut I-beams up to 400mm x 400mm in one pass, reducing the beveling process and improving efficiency.[1]

[1]Data referred to in the video is from BOCHU laboratory, actual results may be affected by factors.

L-Shape

Stronger Sealing

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

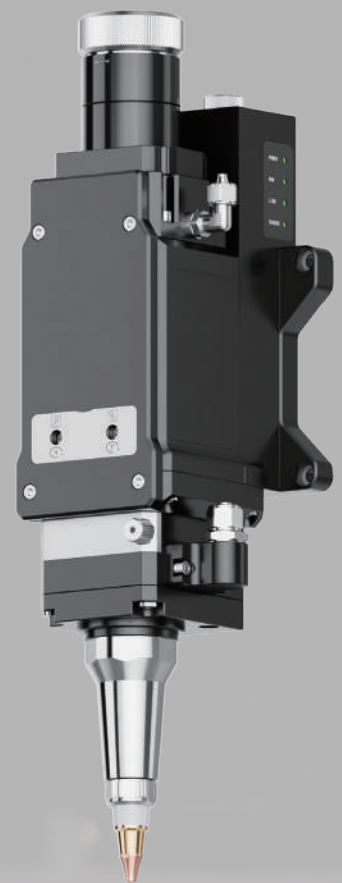## Collision Protection

Easy Maintenance

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

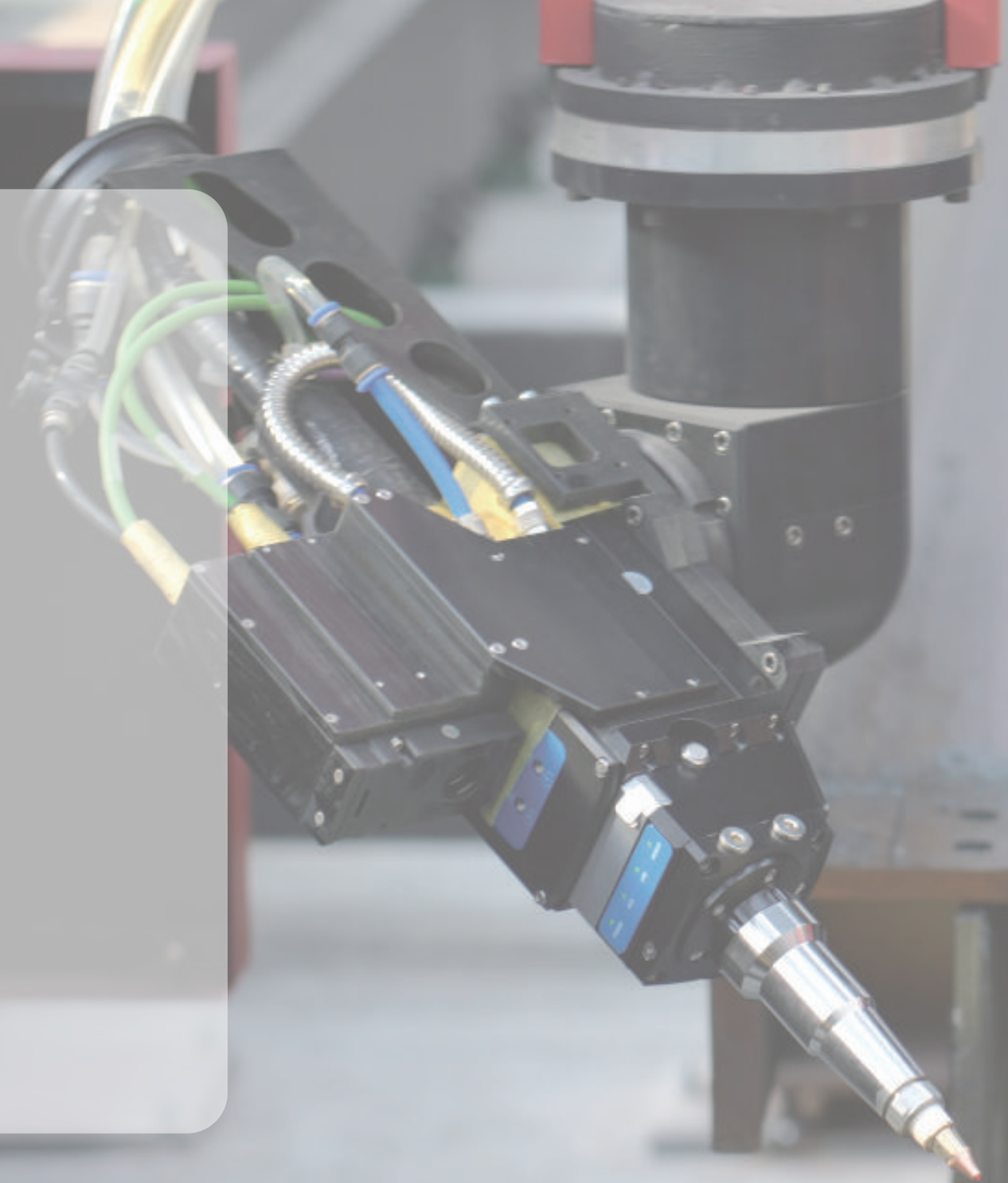## Gas Pressure Monitoring

More Stable Cutting

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

BLT4X1T Series

Other 3D Laser Cutting Head Catlog

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
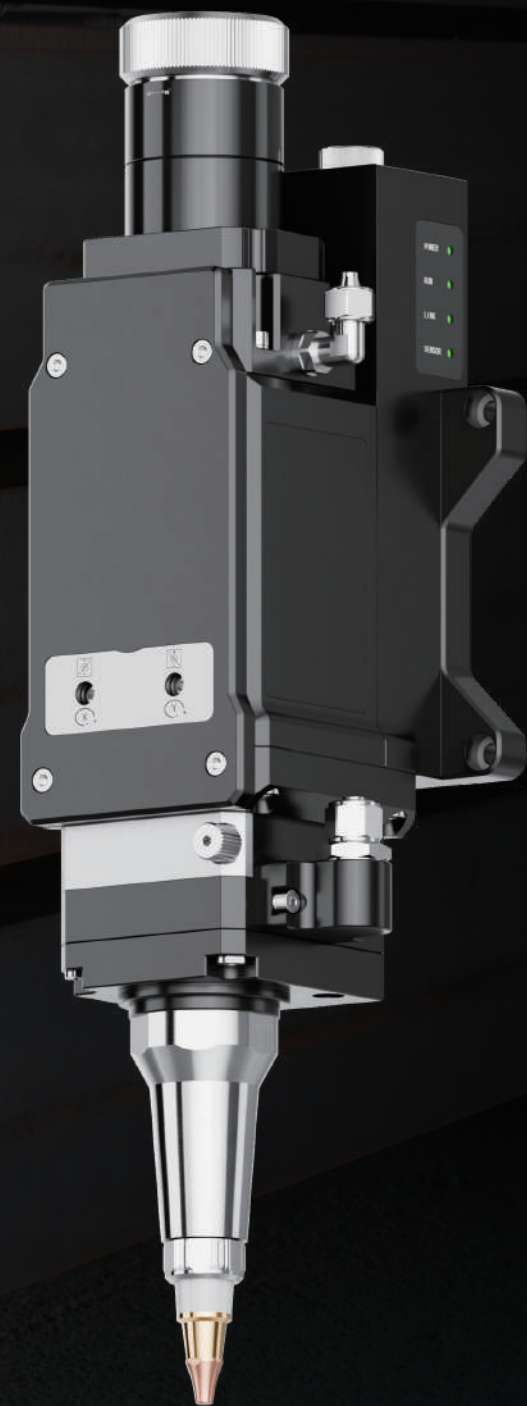## Structural Steel Laser Cutting

Focus Range: ±50mm

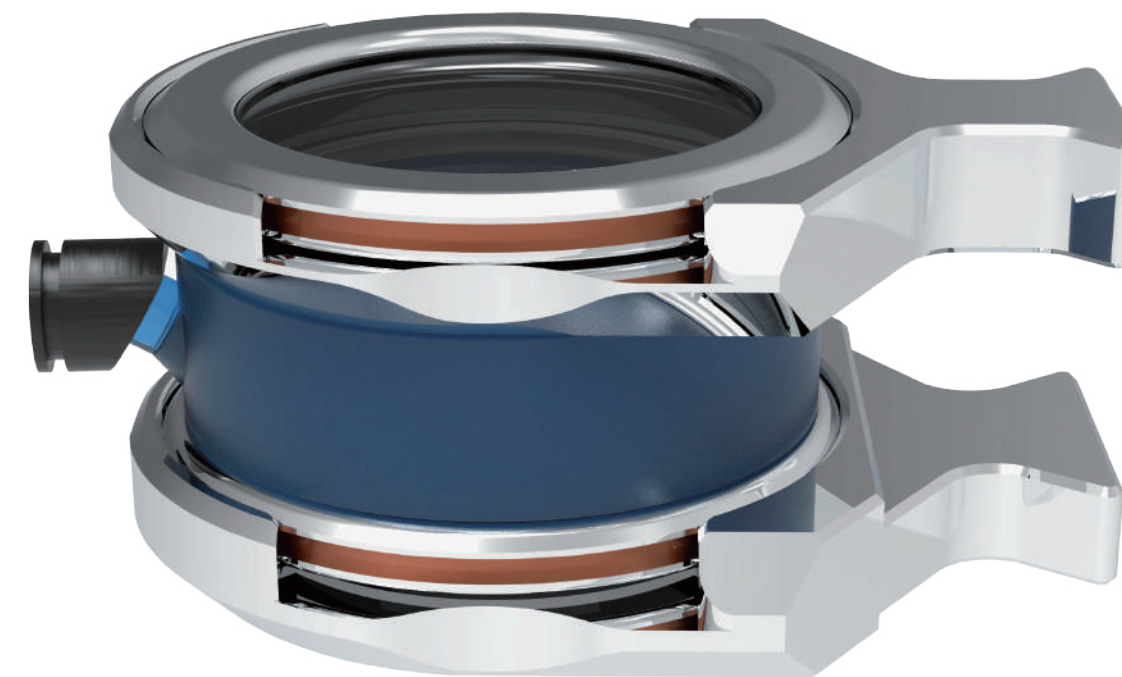Reposition Precision: ±0.01mm

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 Series Features

Bottom Protective Cartridge Sealing

Protect the Protective Windows

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

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.

Built-In Amplifier

More Stable Capacity

Enhance the anti-interference capability.
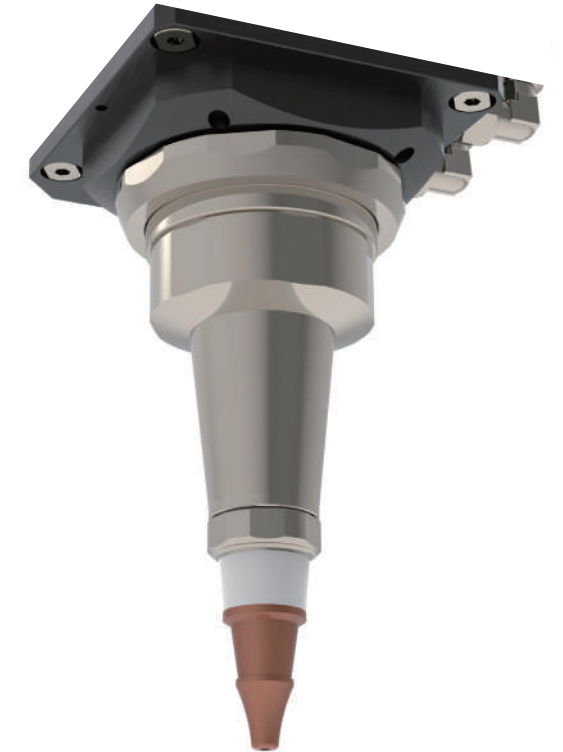
Collision Protection

Easy Maintenance

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

3D Sensing Head

Multi-Type Pipe Cutting

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

BOCI

Intelligent Laser Cutting Head

Bring you intelligent manufacturing

POWER   RUN   LINK   SENSOR