

Penta Bolt Fiber Laser

High Power 4g Industrial Laser Cutting





Penta Bolt Fiber Laser

Penta is proud to unveil its new Bolt fiber laser, their latest addition to the world of high power laser cutting solutions. The Bolt pushes 4g acceleration, making it the fastest machine in the market, bar none! An incredibly fast, accurate, fully enclosed laser machine, the Bolt ushers in a new era of laser cutting performance for heavy industrial applications.

Italian designed Penta lasers bring more than 30 years of industry leading laser technology to the marketplace and are now more affordable than ever. It's no wonder they are the market leader in the high-speed rail, medical and launch vehicle industries.

The new Bolt model offers the highest quality components and a build quality second to none. The machine offers excellent reliability along with high speed and exceptional accuracy. You won't find a better machine for the price!

Built with the Best

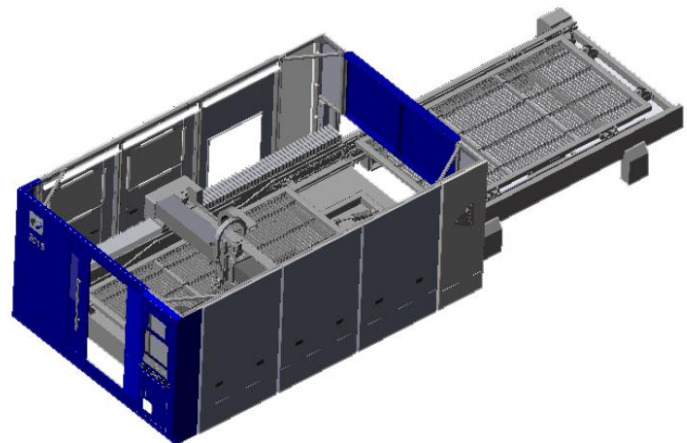
Penta assemble their lasers with world class components to ensure lasting quality at an attractive price, including:

- World Leading IPG Fiber Laser source
- Smart Manager software developed by Penta Italy
- Direct laser control with Pulse Width Modulation
- Automatic gas assist system
- Extensive materials parameter database tuned to each machine
- Yaskawa (Japan) Servo Motor and Drives
- Precitec (German) Cutting Head

STRESS RELIEVED FRAME

Steel frames undergo annealing at 600° to relieve stress. They are built to last years of heavy use without distortion.

Heavy duty auto changing pallet system allows loading up to 1000kg.



YASKAWA SERVO MOTORS & DRIVES

The Bolt is equipped with Japanese servo motors and drives from Yaskawa.

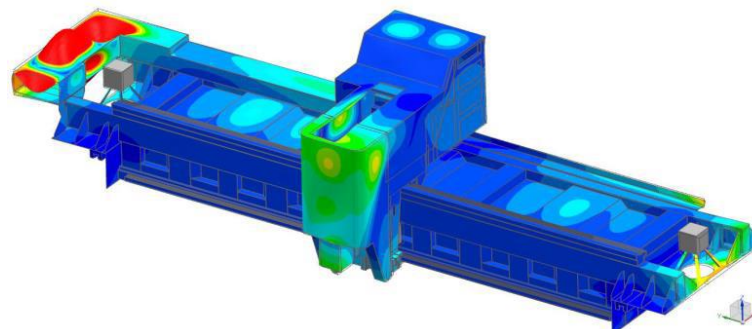
These high-performance servo motors are durable and precise. Built to last.

PENTA'S HI-TECHNOLOGY GANTRY

Penta's latest generation gantry technology includes a lightweight aluminium carriage, reducing weight by 30% .

This gives the lightest weight and the highest rigidity possible, allowing for low inertia and high speeds.

This gantry technology allows Penta Bolt machines to move 4G, faster than any other laser cutting machines.



IPG FIBER LASER SOURCE

IPG Photonics is the world leader in Fiber Laser technology. The beam is of the highest quality, allowing constant cutting with extreme precision.

IPG features a compact, water-cooled, durable design and are modular; This allows easy maintenance and relocation as required.

IPG also boast a class leading wall plug efficiency of 30%. They are the industry standard for good reason.



PRECITEC PROCUTTER HEAD

Top of the range German autofocus cutting head technology from Precitec.

The ProCutter autofocus heads provide automatic height sensing and instantaneous focal adjustment for optimum cutting.

GUDEL RACK AND PINION

Penta Laser uses the best Swiss racks, pinions and speed reducers from Gudel.

These racks and pinions are perfectly tailored to run the Bolt at 4g speeds precisely and reliably.



The Benefit of Fiber

Fiber lasers deliver their energy through an integrated flexible optical fiber. IPG Fiber lasers have a monolithic, entirely solid state, fiber-to-fiber design that does not require mirrors or optics to align or adjust.

These features make fiber lasers easier to integrate and operate in production, medical, and other laser-based systems. While conventional lasers can be delicate due to the precise alignment of mirrors, fiber lasers are more rugged and able to perform in variable working environments.



KEY ADVANTAGES

- Excellent Beam Parameter Product (BPP)
- Constant BPP Over Entire Power Range
- Small Focus over Large Working Distance
- Over 30% Wall-Plug Efficiency
- Maintenance Free Operations
- Compact, Rugged & Easy to Install



STANDARD INCLUSIONS

Model	Name	Quantity
Penta Bolt	Fiber Laser Cutting Machine	1 set
IPG 4kW / 6kW / 8kW / 10kW	Fiber Laser Source	1 set
Precitec ProCutter 8 Autofocus	Cutting Head	1 set
EL.EN Z32 w/ Smart Manager	CNC Controller	1 set
Lantech	Nesting Software	1 set
OD-6 Safety Glass	Viewing Windows	2m ²
Standard	1.5kW Dust Extraction Device	1 set
Standard	Remote Control	1 set
Standard	Water Chiller	1 set
Standard	Protective Mirror	2 pcs
Standard	Nozzle	15 pcs

TECHNICAL SPECIFICATIONS

Items	Penta Bolt
Working area (L*W)	3048×1524mm
X-axis running area	1524mm
Y-axis running area	3048mm
Z-axis running area	120mm / 260mm for two tables
X/Y Positioning Accuracy	0.03mm/m
X/Y Repeated Positioning Accuracy	±0.01mm
Max. Running Speed	220m/min
Max. accelerated speed	4G
Machine weight	12000 kg
Phase	3 phase
Voltage	380V
Frequency	50Hz / 60Hz
Power Requirement	38kVa

MAX. CUTTING THICKNESS

Material (Assist)	4kW	6kW	8kW
Carbon steel (O2)	20mm	25mm	25mm
Stainless steel (Air)	12mm	16mm	20mm
Stainless steel (N2)	16mm	20mm	25mm
Aluminum (Air)	10mm	12mm	12mm
Aluminium (N2)	10mm	12mm	16mm

CUTTING SPEED

The 4g acceleration combined with a high power IPG fiber laser source allows massive speed improvements:

Speed (m/min)			
Thickness (mm)	6kW Fiber	10kW Bolt	Improvement
3	15	35	233.33%
5	7.5	15	200.00%
8	3.2	5	156.25%

Cutting mild steel with Nitrogen allows for blazing fast speeds when compared to conventional oxygencutting:

Speed (m/min)			
Thickness (mm)	Oxygen Cut	Nitrogen Cut	Improvement
3	4	35	875.00%
5	3.2	18	562.50%
8	2.5	7	280.00%



CASE STUDY

Cutting this complex grid pattern across a variety of machines showcases the significant speed advantage of the 4g Bolt machine.

Grid Case Study - 3mm Mild Steel		
Machine	Total Time (s)	Improvement
3kW 1g Machine	682	
8kW 2g Machine	360	189.44%
10kW 4g Bolt	243	280.66%
Grid Case Study - 8mm Mild Steel		
Machine	Total Time (s)	Improvement
3kW 1g Machine	2348	
8kW 2g Machine	1124	208.90%
10kW 4g Bolt	720	326.11%
Grid Case Study - 8mm Mild Steel		
Machine	Total Time (s)	Improvement
3kW 1g Machine	420	
3kW 2g Machine	300	140.00%
3kW 4g Bolt	239	175.73%

