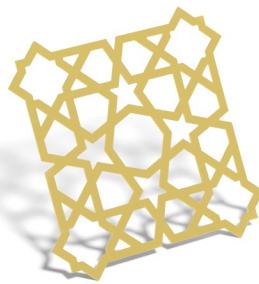


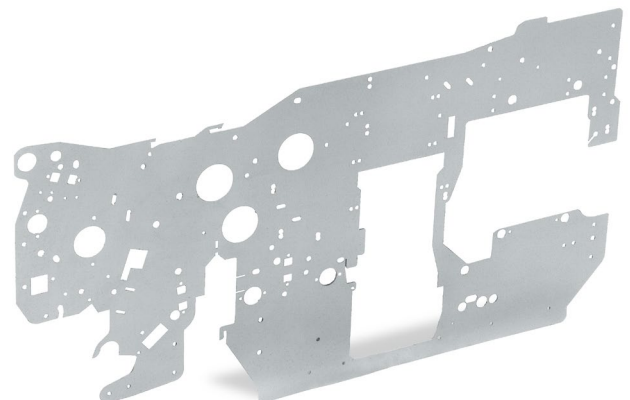
## Laser cutting

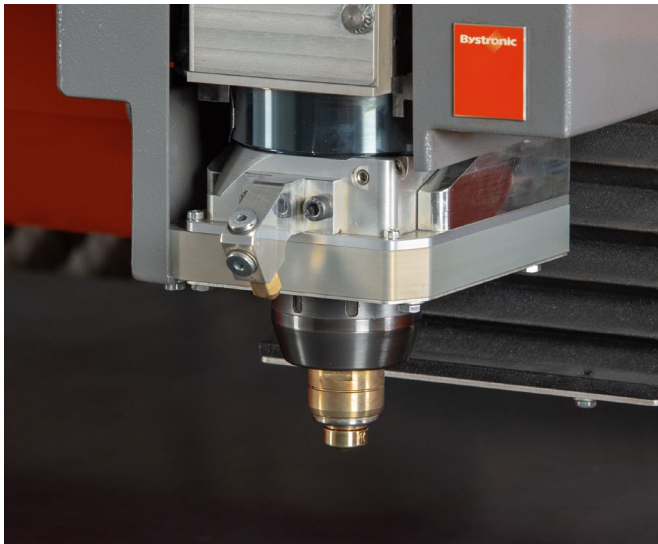
Laser cutting is a thermal cutting process for processing sheet metal. The laser beam is created by the laser source (resonator), conducted by a transport fiber or mirrors in the machine cutting head where a lens focuses it at very high power on a very small diameter. This focused laser beam meets the sheet metal and melts it.



### Versatile

Laser cutting is extremely versatile. In addition to flat materials, tubes and profiles can also be processed by laser cutting systems. Primarily steel, stainless steel, aluminum and also other nonferrous metals are cut. The thickness of the processed sheet metal ranges from 0.030 to 1.18 inch.





### Fiber laser

Fiber lasers are the most efficient way in laser cutting. The laser beam is created by an active fiber and transmitted over a transport fiber to the machine cutting head. Fiber lasers are significantly smaller than CO<sub>2</sub> lasers and generate several times the power from the same amount of current. A fiber cutting system is primarily suited for processing thin to thick sheet metal from steel, stainless steel, aluminium and also other nonferrous metals (copper and brass).

### Cutting techniques

Depending on the cutting technique employed, different process gases are used, and these are forced through the kerf at different pressures. The various techniques differ primarily in respect to cutting speed and the quality of the cutting edges.

### Flame cutting

During flame cutting, the material is heated to ignition temperature by the laser beam, burnt by introducing oxygen, and blown out of the kerf using gas pressures of between 5.8 and 145 psi. Flame cutting permits the cutting of thick steel sheets up to 2 inch.

### Fusion cutting

During fusion cutting, the material in the kerf is fused by the laser beam. The cutting gas used is nitrogen or argon. The cutting gas expels the fused metal from the kerf at pressures of up to 290 psi. Since the cutting gases do not react with the material, oxide-free cutting edges are produced that do not require reworking.

### Cutting gas

The laser beam is focused by the lens in the cutting head and directed onto the workpiece by a nozzle. The cutting gas also flows through this nozzle. Depending on the application, oxygen, nitrogen or compressed air are used as the cutting gas.



# Bystronic laser sources

A wide selection of various, powerful laser sources is one of Bystronic's trademarks. All lasers are high-quality and highly energy efficient, not least because of their high efficiency. The portfolio contains both fiber and CO<sub>2</sub> lasers.

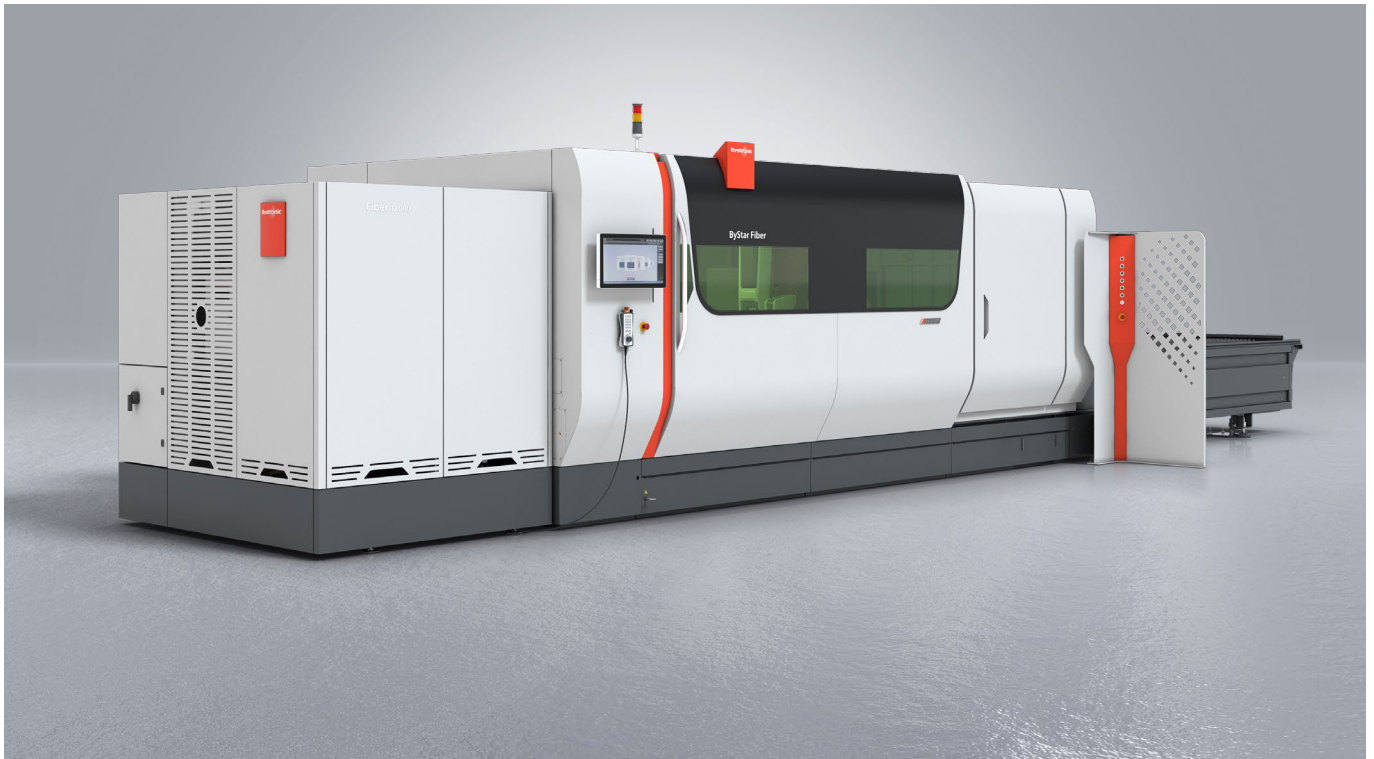
Type of machine	Fiber laser								
	Laser sources								
	Fiber 2000	Fiber 3000	Fiber 4000	Fiber 6000	Fiber 8000	Fiber 10000	Fiber 12000	Fiber 15000	Fiber 20000
ByStar Fiber 3015		■	■	■	■	■	■	■	■
ByStar Fiber 4020		■	■	■	■	■	■	■	■
ByStar Fiber 6225		■	■	■	■	■	■		■
ByStar Fiber 8025		■	■	■	■	■	■		■
ByCut Smart 6225		■	■	■	■	■	■		
BySprint Fiber 12020		■	■	■					
BySmart Fiber 3015	■	■	■	■	■	■			
BySmart Fiber 4020		■	■	■	■	■			

Material type	Cutting thicknesses								
	Fiber 2000	Fiber 3000	Fiber 4000	Fiber 6000	Fiber 8000	Fiber 10000	Fiber 12000	Fiber 15000	Fiber 20000
Steel (max. cutting sheet thickness)	0.5 inch	0.75 inch	0.75 inch	1 inch	1 inch	1 inch	1 inch	1 inch	1 inch
Steel (with option BeamShaper)		0.75 inch	1 inch	1.18 inch	1.18 inch	1.18 inch	1.18 inch	1.18 inch	
Steel (advanced applications)								2 inch	2 inch
Stainless steel (max. cutting sheet thickness)	0.25 inch	0.5 inch	0.625 inch	1.18 inch	1.18 inch	1.18 inch	1.18 inch	1.57 inch	1.57 inch
Stainless steel (advanced applications)								2 inch	2 inch
Aluminum (max. cutting sheet thickness)	0.312 inch	0.5 inch	0.75 inch	1.18 inch	1.18 inch	1.18 inch	1.18 inch	1.57 inch	1.57 inch
Aluminum (advanced applications)								2 inch	2 inch
Brass (max. sheet thickness)	0.16 inch	0.25 inch	0.312 inch	0.59 inch	0.59 inch	0.59 inch	0.59 inch	0.75 inch	0.75 inch
Copper (max. sheet thickness)	0.12 inch	0.25 inch	0.312 inch	0.47 inch	0.47 inch	0.47 inch	0.47 inch	0.75 inch	0.75 inch

## Fiber Warranty Premium

The exclusive service for all fiber laser cutting systems. 5 years comprehensive protection for the replacement of parts of the fiber laser source. During the warranty period, the cutting hours are unlimited.





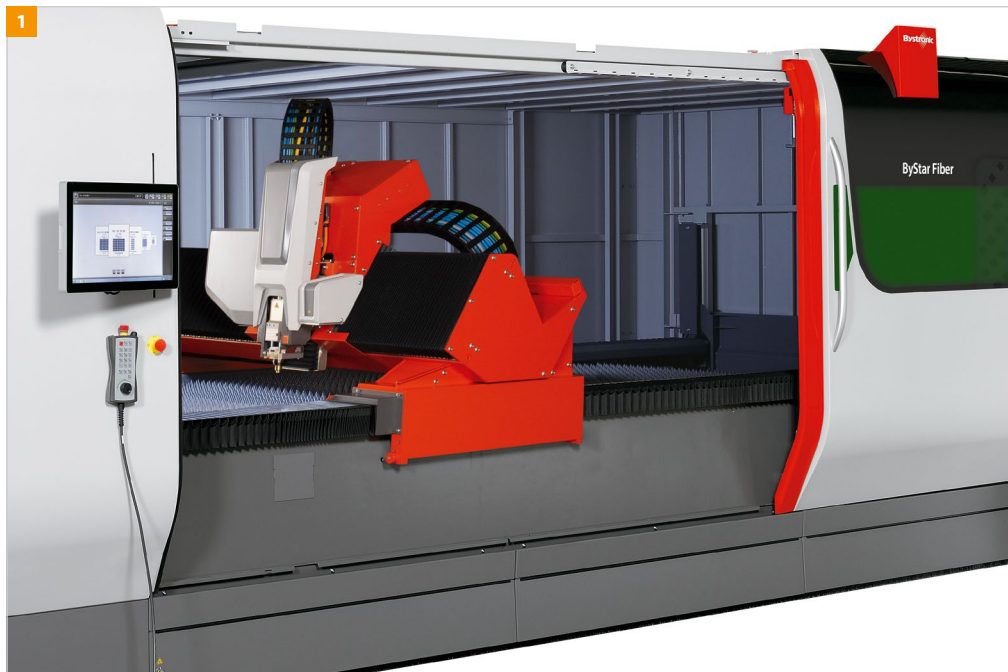
# ByStar Fiber

## Fiber laser cutting for the highest performance

### Customer benefits

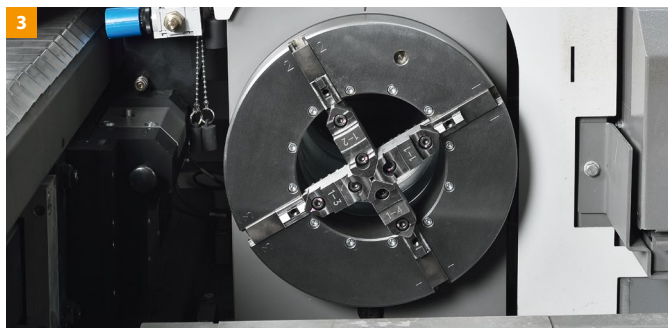
- Enhanced cutting quality and productivity thanks to 20 kW of laser power
- High-speed cutting of steel: On average 40% higher productivity in mild steel and stainless steel 0.15 to 0.78 inch sheets compared to 15 kW. Shorter piercing times with sheet thicknesses above approx. 0.59 inch
- In addition, the 20 kW output enables advanced applications in steel and aluminum up to 1.96 inch
- «Parameter Wizard» (optional): Ensures that the correct quality of the cut parts is always selected – by obtaining the perfect parameter within minutes
- Using a 21.5-inch touch screen, Bystronic's ByVision Cutting software is operated just as simply as a smartphone
- A wide range of automation solutions guarantees maximum machine utilization and process reliability even during unmanned operation





- 1 Unlimited accessibility
- 2 Cutting head
- 3 Rotary axis\*
- 4 Nozzle changer
- 5 Detection Eye

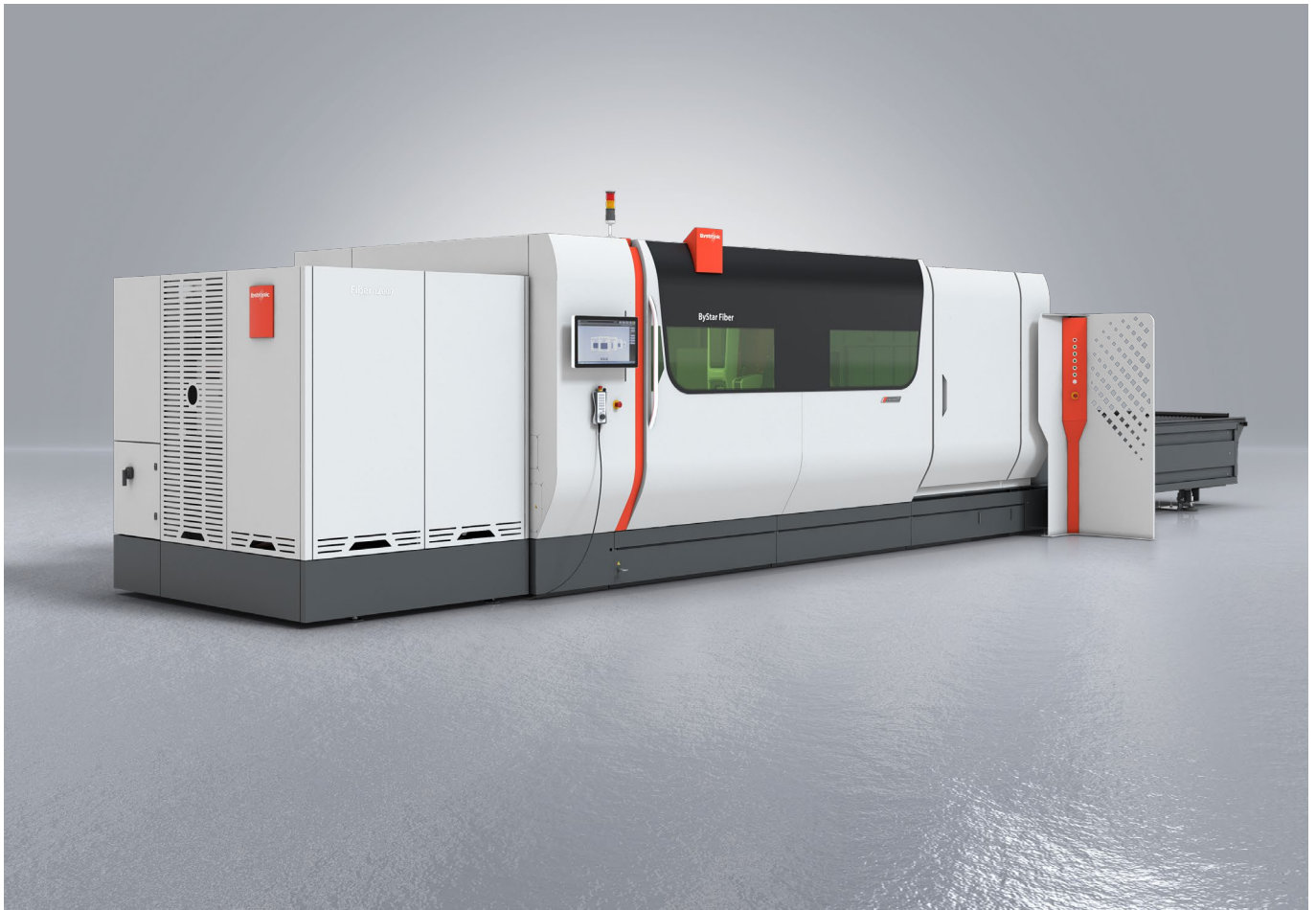
\* For 3015 and 4020 format only



	ByStar Fiber 3015	ByStar Fiber 4020	ByStar Fiber 6225	ByStar Fiber 8025
Nominal sheet size	120 × 60 inch	160 × 80 inch	244 × 100 inch	319 × 100 inch
Max. simultaneous positioning speed	6,681 inch/min	6,681 inch/min	6,681 inch/min	6,681 inch/min
ByVision Cutting operation and manual control unit	■	■	■	■
Circumscribed circle diameter of the rotary axis	1.1–12.4 inch	1.1–12.4 inch		



# ByStar Fiber Technical Data





	ByStar Fiber 3015	ByStar Fiber 4020	ByStar Fiber 6225	ByStar Fiber 8025
Length	469 inch	559 inch	795 inch	937 inch
Width	224 inch	248 inch	272 inch	272 inch
Height	126 inch	126 inch	126 inch	126 inch
Nominal sheet size (X)	120 inch	160 inch	244 inch	319 inch
Nominal sheet size (Y)	60 inch	80 inch	100 inch	100 inch
Cutting area (X)	122 inch	162 inch	246 inch	321 inch
Cutting area (Y)	62 inch	83 inch	102 inch	102 inch
Cutting area (Z)	4 inch	4 inch	6 inch	6 inch
Max. positioning speed parallel axis X/Y	4,724 inch/min	4,724 inch/min	4,724 inch/min	4,724 inch/min
Max. simultaneous positioning speed	6,681 inch/min	6,681 inch/min	6,681 inch/min	6,681 inch/min
Bilateral repeatability of positioning of one axis R (following ISO 230-2:2014(E))	0.001 inch	0.001 inch	0.001 inch	0.001 inch
Averaged, bilateral position deviation of one axis M (following ISO 230-2:2014(E))	0.002 inch	0.002 inch	0.004 inch	0.004 inch
Edge detection accuracy ( $\pm$ )	0.02 inch	0.02 inch	0.02 inch	0.02 inch
Max. workpiece weight	2,420 lbs	4,190 lbs	8,040 lbs	10,380 lbs
Maximum allowed workpiece weight on both shuttle tables	4,050 lbs	7,080 lbs	16,080 lbs	20,760 lbs
Machine weight (without exhaust, chiller and conveyor)	24,200 lbs	32,000 lbs	48,500 lbs	59,500 lbs
Table changeover time	25 s	28 s	56 s	64 s
Operation	ByVision Cutting Touchscreen and manual control unit			



Laser source	Fiber 3000	Fiber 4000	Fiber 6000	Fiber 8000
Power	3,000 W	4,000 W	6,000 W	8,000 W
Range of adjustment	300–3,000 W	400–4,000 W	600–6,000 W	800–8,000 W
Wavelength	Fiber	Fiber	Fiber	Fiber
Steel (max. cutting sheet thickness) *	0.75 inch	0.75 inch	1 inch	1 inch
Steel (with option BeamShaper) *	0.75 inch	1 inch	1.18 inch	1.18 inch
Steel (Option «Advanced Applications») *				
Stainless steel (max. cutting sheet thickness) *	0.5 inch	0.6 inch	1.18 inch	1.18 inch
Stainless steel (Option «Advanced Applications») *				
Aluminum (max. cutting sheet thickness) *	0.5 inch	0.75 inch	1.18 inch	1.18 inch
Aluminum (Option «Advanced Applications») *				
Brass (max. sheet thickness) *	0.25 inch	0.31 inch	0.59 inch	0.59 inch
Copper (max. sheet thickness) *	0.25 inch	0.31 inch	0.47 inch	0.47 inch
Total electric consumption of system ByStar Fiber 3015 **	20 kW	21 kW	22 kW	24 kW
Total electric consumption of system ByStar Fiber 4020 **	20 kW	21 kW	22 kW	27 kW
Total electric consumption of system ByStar Fiber 6225 **	21 kW	22 kW	23 kW	26 kW
Total electric consumption of system ByStar Fiber 8025 **	21 kW	23 kW	23 kW	26 kW

Laser source	Fiber 10000	Fiber 12000	Fiber 15000	Fiber 20000
Power	10,000 W	12,000 W	15,000 W	20,000 W
Range of adjustment	1,000–10,000 W	1,200–12,000 W	400–15,000 W	400–20,000 W
Wavelength	Fiber	Fiber	Fiber	Fiber
Steel (max. cutting sheet thickness) *	1 inch	1 inch	1 inch	1 inch
Steel (with option BeamShaper) *	1.18 inch	1.18 inch	1.18 inch	
Steel (Option «Advanced Applications») *			2 inch	2 inch
Stainless steel (max. cutting sheet thickness) *	1.18 inch	1.18 inch	1.57 inch	1.57 inch
Stainless steel (Option «Advanced Applications») *			2 inch	2 in
Aluminum (max. cutting sheet thickness) *	1.18 inch	1.18 inch	1.57 inch	1.57 inch
Aluminum (Option «Advanced Applications») *			2 inch	2 in
Brass (max. sheet thickness) *	0.59 inch	0.59 inch	0.75 inch	0.75 inch
Copper (max. sheet thickness) *	0.47 inch	0.47 inch	0.75 inch	0.75 inch
Total electric consumption of system ByStar Fiber 3015 **	25 kW	27 kW	27 kW	30 kW***
Total electric consumption of system ByStar Fiber 4020 **	28 kW	27 kW	27 kW	30 kW***
Total electric consumption of system ByStar Fiber 6225 **	27 kW	27 kW	27 kW	30 kW***
Total electric consumption of system ByStar Fiber 8025 **	27 kW	27 kW	27 kW	30 kW***

\* In order to cut the maximum thicknesses, the following conditions must be met:  
 - optimally maintained and adjusted laser cutting systems  
 - the materials must be of the quality specified by Bystronic (laser materials)

\*\* Entire system with exhaust and chiller: Electrical consumption data shows an average value based on 4 reference cutting plans of mild steel between 1–10 mm thickness

\*\*\* Estimated, measurement data will be added later

The right to make changes to dimensions, construction, and equipment is reserved. ISO-9001-certified.

The technical data can vary in the different countries, according to local security rules and configuration of the machine.