

Max Cutting Parameters

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Single module MFSC-1000X-50um Cutting Parameter

1、Single module MFSC-1000X Cutting Parameter

1.1 MAX MFSC-1000X QBH output fiber core 50μm Cutting Parameter (collimating 100mm/focusing 125mm)

MFSC-1000X CW laser (50μm)								
Material	Thickness (mm)	Speed (m/min)	Power (W)	Gas	Pressure (bar)	Injector (mm)	Focus Position (mm)	Cutting Height (mm)
Carbon Steel	0.8	18-20	1000	N2/ Air	11	2.0 Single	0	0.6
	1	10-15			11	2.0 Single	0	0.6
	2	4-5	1000	O ₂	1.5	1.0 double	+3	0.6
	3	2.5-3.2			0.6	1.0 double	+4	0.6
	4	2.3-2.8			0.6	1.0 double	+4	0.6
	5	1.8-2.1			0.6	1.0 double	+5	0.6
	6	1.2-1.5			0.6	1.0 double	+6	0.6
	8	1-1.1			0.6	1.5 pairs	+5.5	1.5
	10	0.7-0.9			0.6	1.5 pairs	+5	1.5
Stainless Steel	0.8	18-22	1000	N ₂	10	2.0 Single	0	0.5
	1	13-18			12	2.0 Single	0	0.5
	2	4-6			12	2.0 Single	-1	0.5
	3	2.5-3			12	3.0 Single	-1.5	0.5
	4	1-1.5			14	3.0 Single	-2	0.5
	5	0.6-0.8			16	3.0 Single	-3	0.5
Aluminium	0.8	18-20	1000	N ₂	10	2.0 Single	0	0.8
	1	10-15			12	2.0 Single	0	0.5
	2	4-5			14	2.0 Single	-1	0.5
	3	1-1.5			16	2.0 Single	-1.5	0.5
Brass	1	8.0-10	1000	N ₂	10	2.0 Single	0	0.5
	2	2.0-2.5			14	2.0 Single	-1	0.5
	3	0.8-1.0			16	3.0 Single	-1.5	0.5

Note: During the actual batch cutting, the data may change due to the influence of machine tool, system, cutting head, air pressure, materials and other factors. The red label parameters in the table are the proofing parameters, which are greatly affected by various factors in the actual processing, and are only suitable for small batch production. Mass production and processing are not recommended. It is recommended to use higher power lasers.

1.2 Single module MFSC-1000X fiber core 50μm Perforation reference

MAX MFSC-1000X 10mm Carbon Steel oxygen perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Jetting Height mm	Pressure bar	Focus mm	Perforation Time ms	Stop Light Blowing ms
High Position	1000	45	100	15	1	-2	100	
Median	1000	45	100	12	0.6	-4	600	
Low Position	1000	40	100	8	0.6	-6	2500	

MAX MFSC-1000X 5mm Stainless Steel nitrogen perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Jetting Height mm	Pressure bar	Focus mm	Perforation Time ms	Stop Light Blowing ms
High Position	1000	55	1000	15	10	-2	100	
Median	1000	50	1000	12	10	-4	500	
Low Position	1000	45	1000	8	10	-6	1000	

The perforation parameters take the extreme thickness of Carbon Steel/Stainless Steel that can be penetrated under the current power as an example. The perforation parameters can be adjusted in a wide range, and the parameters such as Cut Power and frequency can be adjusted according to the actual effect to achieve the best effect; The perforations are sorted in order, and the High Position is the first level of perforations, and so on.

Single module MFSC-1500X-50um Cutting Parameter

2、Single module MFSC-1500X Cutting Parameter

2.1 MAX single module MFSC-1500X QBH output fiber core 50μm Cutting Parameter (collimating 100mm/focusing 125mm)

MFSC-1500X CW laser (50μm)								
Material	Thickness mm	Speed m/min	Power W	Gas	Pressure Bar	Injector mm	Focus Position mm	Cutting Height mm
Carbon Steel	1	22-25	1500	N2/ Air	10	2.0 Single	0	0.6
	2	4-5	1500	O ₂	1.5	1.0 double	+5	0.6
	3	3-4			0.6	1.0 double	+5	0.6
	4	2.3-2.8			0.6	1.0 double	+5	0.6

	5	1.8-2.3			0.6	1.0 double	+5	0.6
	6	1.6-2.0			0.6	1.0 double	+5	0.6
	8	1.2-1.5			0.8	4.0 Double	+2	1.5
	10	0.9-1.2			0.8	4.0 Double	+2	1.5
	12	0.8			0.8	4.0 Double	+2	1.5
	14	0.65			0.8	4.0 Double	+2.5	1.5
	16	0.5			0.8	4.0 Double	+3	1.5
Stainless Steel	1	20-35	1500	N2	10	2.0 Single	0	0.5
	2	8-10			10	2.0 Single	-1	0.5
	3	4.5-5.5			12	3.0 Single	-1.5	0.5
	5	1.5-2.0			15	3.0 Single	-5	0.5
	6	0.7-0.9			15	4.0 Single	-5	0.5
Aluminum	1	15-18	1500	N2	10	2.0 Single	0	0.5
	2	4.0-5.0			12	2.0 Single	-1	0.5
	3	1.5-2.5			14	2.5 Single	-1.5	0.5
	4	1.0-1.3			14	3.0 Single	-2.5	0.5
Brass	1	12-15	1500	N2	10	3.0 Single	0	0.5
	2	4.0-5.0			10	3.0 Single	-1	0.5
	3	1.5-2.0			10	3.0 Single	-1	0.5

Note: During the actual batch cutting, the data may change due to the influence of machine tool, system, cutting head, air pressure, materials and other factors. The red label parameters in the table are the proofing parameters, which are greatly affected by various factors in the actual processing, and are only suitable for small batch production. Mass production and processing are not recommended. It is recommended to use higher power lasers.

2.2 Single module MFSC-1500X fiber core 50μm Perforation reference

MAX MFSC-1500X 16mm Carbon Steel oxygen perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Pressure bar	Focus mm	Perforation Time ms	Stop light blowing ms
High Position	1000	55	100	15	1	-2	200	
Median	1000	45	100	12	0.6	-4	800	
Low Position	1000	40	100	8	0.6	-6	2000	

MAX MFSC-1500X 6mm Stainless Steel nitrogen perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Pressure bar	Focus mm	Perforation Time ms	Stop Light Blowing ms
High Position	1000	55	2500	15	10	-2	200	
Median	1000	50	2000	12	10	-4	600	
Low Position	1000	45	2000	8	10	-6	800	

The perforation parameters take the extreme thickness of Carbon Steel/Stainless Steel that can be penetrated under the current power as an example. The perforation parameters can be adjusted in a wide range, and the parameters such as Cut Power and frequency can be adjusted according to the actual effect to achieve the best effect; The perforations are sorted in order, and the High Position is the first level of perforations, and so on.

Single module MFSC-2000X-50um Cutting Parameter

3、Single module MFSC-2000X Cutting Parameter

3.1 MAX single module MFSC-2000X QBH output fiber core 50μm Cutting Parameter (collimating 100mm/focusing 125mm)

MFSC-2000X CW laser (50μm)								
Material	Thickness mm	Speed m/min	Power W	Gas	Air pressure bar	Nozzle mm	Focus Position mm	Spray Height mm
Carbon Steel	1	25-30	2000	N2/ Air	10	2.0 Single	0	0.6
	2	6-8			10	2.0 Single	-1	0.5
	2	5-6	2000	O ₂	1.5	1.0 double	+3	0.6
	3	3-4			0.8	1.0 double	+4	0.6
	4	2.5-3.0			0.8	1.0 double	+4	0.6
	5	2.2-2.6			0.6	1.0 double	+5	0.6
	6	1.8-2.0			0.6	1.0 double	+6	0.8
	8	1.2-1.6			0.6	1.2 Double	+5.5	0.8
	10	1.0-1.2			0.6	1.2 Double	+5	0.8
	12	0.8-1.0			0.6	4.0 Double	+4	1.0
	14	0.7-0.85			0.6	4.0 Double	+4	1.0
	16	0.6-0.7			0.6	4.0 Double	+4	1.0
	18	0.5-0.6			0.6	5.0 Double	+4	1.0

	20	0.4-0.5			0.6	5.0 Double	+4	1.0
Stainless Steel	1	28-35	2000	N2	10	2.0 Single	0	0.5
	2	9.0-15			10	2.0 Single	-1	0.5
	3	6.0-7.0			12	3.0 Single	-1.5	0.5
	4	2.8-3.5			14	3.0 Single	-2	0.5
	5	1.5-2.5			15	3.0 Single	-3	0.5
	6	1.0-1.5			16	3.5 Single	-4	0.5
	8	0.7-0.9			18	4.0 Single	-5	0.5
Aluminum	1	22-35	2000	N2	12	2.0 Single	0	0.5
	2	8.0-13			12	2.0 Single	-0.5	0.5
	3	4.0-4.5			14	3.0 Single	-1	0.5
	4	2.5-3.0			15	3.0 Single	-2	0.5
	5	1.5-2.0			16	3.0 Single	-3	0.5
	6	0.8-1.3			16	3.5 Single	-4	0.5
Brass	1	15-18	2000	N2	10	2.0 Single	0	0.8
	2	6.0-8.0			10	2.0 Single	-1	0.5
	3	2.5-3.0			12	3.0 Single	-1.5	0.5
	4	1.0-1.3			13	3.0 Single	-2	0.5
	5	0.7-0.8			14	3.5 Single	-2.5	0.5
Copper	1	20-22	2000	O2	12	3.0 Single	-1	0.5
	2	5.5-6.5			12	3.0 Single	-1	0.5
	3	2.0-3.0			14	3.0 Single	-2	0.5

Note: When cutting Carbon Steel and Stainless Steel with air and nitrogen, the efficiency and stability will be improved, and the slag hanging phenomenon is also easy to occur with the increase of thickness. The above data parameters may change due to the influence of machine tool, system, cutting head, air pressure, materials and other factors during the actual batch cutting. The red label parameters in the table are sampling parameters, which are greatly affected by various factors in the actual processing, It is only suitable for small batch production. It is not recommended to use large batch production and processing. It is recommended to use higher power lasers. Copper needs to be cut with high-pressure oxygen, and air or nitrogen is easy to damage the laser.

3.2 Single module MFSC-2000X fiber core 50μm Recommended perforation

3.2.1 MAX MFSC-2000X 20mm Carbon Steel oxygen perforation parameters (for reference only)

Stage	Power W	Cut Power%	Frequency Hz	Nozzle Height mm	Air pressure bar	Focus mm	Piercing time ms	Stop light blowing ms
High Position	2000	55	100	20	0.8	-2	200	
Median	2000	45	100	15	0.7	-4	1000	
Low Position	2000	55	100	8	0.6	-6	2000	

3.2.2 MAX MFSC-2000X 8mm Stainless Steel nitrogen perforation parameters (for reference only)

Stage	Power W	Cut Power%	Frequency Hz	Nozzle Height mm	Air pressure bar	Focus mm	Piercing time ms	Stop light blowing ms
High Position	2000	55	2500	16	10	-2	200	
Median	2000	50	2500	12	10	-4	1000	
Low Position	2000	40	2000	8	10	-6	500	

The perforation parameters take the extreme thickness of Carbon Steel/Stainless Steel that can be penetrated under the current power as an example. The perforation parameters can be adjusted in a wide range, and the parameters such as Cut Power and frequency can be adjusted according to the actual effect to achieve the best effect; The perforations are sorted in order, and the High Position is the first level of perforations, and so on.

Single module MFSC-3000X-50um Cutting Parameter

4、Single module MFSC-3000X Cutting Parameter

4.1 MAX MFSC-3000X QBH output fiber core 50μm Cutting Parameter (collimating 100mm/focusing 125mm)

MFSC-3000X CW laser (50μm)								
Material	Thickness (mm)	Speed (m/min)	Power (W)	Gas	Air Pressure (bar)	Nozzle (mm)	Focus position (mm)	Cutting Height (mm)
Carbon Steel	1	35-40	3000	N2/ Air	10	2.0 Single	0	0.6
	2	20-25			10	2.0 Single	-1	0.6
	2	5.0-6.0	3000		1.5	1.0 double	+3	0.6
	3	3.5-4.5	3000		0.8	1.0 double	+4	0.6
	4	3.2-4.0	3000		0.8	1.0 double	+5	0.6
	5	3.0-3.5	3000		0.8	1.0 double	+6	0.6
	6	2.5-3.0	3000		0.8	1.0 double	+7	0.6

	8	2.0-2.3	3000	O	0.8	1.2 Double	+7	0.6
	10	1.4-1.8	3000		0.8	1.2 Double	+5	0.6
	12	1.2-1.4	3000		0.8	4.0 Double	+4	0.6
	14	0.8-0.9	2600		0.8	4.0 Double	+4	1.0
	16	0.7-0.9	2600		0.6	4.0 Double	+4	1.0
	18	0.65-0.75	2400		0.6	4.0 Double	+4	1.0
	20	0.6-0.7	2400		0.6	5.0 Double	+4.5	1.0
	22	0.5-0.6	2400		0.6	5.0 Double	+4.5	1.0
	1	45-55			10	2.0 Single	0	0.5
	2	24-28			10	2.0 Single	-0.5	0.5
Stainless Steel	3	8-13	3000	N2	12	3.0 Single	-1	0.5
	4	5-6			14	3.0 Single	-1.5	0.5
	5	3-4			15	3.0 Single	-3	0.5
	6	2.3-3.0			16	3.0 Single	-4	0.5
	8	1.0-1.5			16	4.0 Single	-5	0.5
	10	0.8-1.0			18	4.0 Single	-7	0.5
Aluminum	1	40-50	3000	N2	10	2.0 Single	0	0.6
	2	15-20			10	2.0 Single	-0.5	0.5
	3	8-10			12	3.0 Single	-1	0.5
	4	4-5			14	3.0 Single	-2	0.5
	5	2.5-3.5			16	3.0 Single	-3	0.5
	6	2.0-2.3			16	3.0 Single	-4	0.5
	8	0.8-1.3			16	3.5 Single	-5	0.5
Brass	1	25-28	3000	N2	10	2.0 Single	0	0.5
	2	13-15			10	2.0 Single	-1	0.5
	3	5.0-6.0			12	3.0 Single	-1	0.5
	4	2.5-3.0			12	3.0 Single	-2	0.5
	5	1.8-2.3			13	3.5 Single	-2.5	0.5
	6	1.0-1.3			14	4.5 Single	-3	0.5

Copper	1	25-28	3000	O2	12	3.0 Single	-1	0.5
	2	8.0-10			12	3.0 Single	-1	0.5
	3	3.0-4.5			13	3.0 Single	-2	0.5
	4	2.0-2.5			14	3.5 Single	-4	0.5

Note: When cutting Carbon Steel and Stainless Steel with air and nitrogen, the efficiency and stability will be improved, and the slag hanging phenomenon is also easy to occur with the increase of thickness. The above data parameters may change due to the influence of machine tool, system, cutting head, air pressure, materials and other factors during the actual batch cutting. The red label parameters in the table are sampling parameters, which are greatly affected by various factors in the actual processing, it is only suitable for small batch production. It is not recommended to use large batch production and processing. It is recommended to use higher power lasers. Copper needs to be cut with high-pressure oxygen, and air or nitrogen is easy to damage the laser.

4.2 Single module MFSC-3000X QBH output fiber core 50μm Recommended perforation

4.2.1 MAX MFSC-3000X 22mm Carbon Steel oxygen perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Pressure bar	Focus mm	Piercing time ms	Stop light blowing ms
High Position	3000	45	200	20	0.8	-4	200	
Median	3000	45	150	12	0.7	-6	3000	
Low Position	3000	55	150	8	0.6	-8	2000	

4.2.2 MAX MFSC-3000X 10mm Stainless Steel nitrogen perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Air pressure bar	Focus mm	Piercing time ms	Stop Light Blowing ms
High Position	3000	55	2500	20	10	-4	150	
Median	3000	45	2500	12	10	-6	1000	
Low Position	3000	45	2000	8	10	-8	500	

The perforation parameters take the extreme thickness of Carbon Steel/Stainless Steel that can be penetrated under the current power as an example. The perforation parameters can be adjusted in a wide range, and the parameters such as Cut Power and frequency can be adjusted according to the actual effect to achieve the best effect; The perforations are sorted in order, and the High Position is the first level of perforations, and so on.

Single module MFSC-4000M-50um Cutting Parameter

5、Single module MFSC-4000M Cutting Parameter

5.1 MFSC-4000M QBH output fiber core 50μm Cutting Parameter (collimating 100mm/focusing 150mm)

MFSC-4000M CW laser (50μm)									
Material	Thickness (mm)	Speed (m/min)	Power (W)	Gas	Air pressure (bar)	Nozzle (mm)	Focus Position (mm)	Cutting Height (mm)	Remarks
Carbon Steel	1	40-50	4000	N2/ Air	10	2.0 Single	0	0.6	
	2	15-20	4000		10	2.0 Single	-1	0.6	
	3	10-12	4000		10	2.0 Single	-1	0.6	
	3	4.0-4.5	2500	O ₂	0.6	1.0 double	+4	0.6	
	4	3.5-4.0	3000		0.6	1.0 double	+5	0.6	
	5	3.0-3.5	3300		0.6	1.0 double	+5	0.6	
	6	2.6-3.2	3500		0.6	1.0 double	+6	0.6	
	8	2.0-2.3	4000		0.6	1.2 Double	+6	0.8	
	10	1.8-2.5	4000		0.6	1.2 Double	+6	0.8	
	12	1.5-1.7	2600		0.8	4.0 Double	+5	1.0	
	14	1.2-1.4	2600		0.8	4.0 Double	+5	1.0	
	16	1.0-1.2	2600		0.7	4.0 Double	+5	1.0	
	18	0.7-0.8	2600		0.7	4.0 Double	+5	1.5	
	20	0.6-0.7	2600		0.7	4.0 Double	+5	1.5	
	22	0.5-0.6	2600		0.6	5.0 Double	+5	1.5	
	25	0.4-0.5	2600		0.6	5.0 Double	+5	1.5	
Stainless Steel	1	50-60	4000	N2	10	2.0 Single	0	0.5	
	2	20-25			10	2.0 Single	-1	0.5	
	3	10-13			12	3.0 Single	-1.5	0.5	
	4	8-10			13	3.0 Single	-2	0.5	
	5	4-5			14	3.0 Single	-2	0.5	
	6	3.5-4.0			15	3.0 Single	-2	0.5	
	8	1.5-2.0			16	4.0 Single	-3	0.5	

	10	1.2-1.5			18	4.0 Single	-4	0.5	
	12	0.7-1.0			18	5.0 Single	-5	0.5	
	14	0.6-0.8			18	5.0 Single	-8	0.5	
	16	0.3-0.5			20	5.0 Single	-8	0.5	
Aluminum	1	30-50	4000	N 2	10	2.0 Single	0	0.6	
	2	20-24			12	2.0 Single	0	0.6	
	3	10-13			14	3.0 Single	-1	0.6	
	4	4-5			14	3.0 Single	-2	0.5	
	5	3-4			15	3.0 Single	-3	0.5	
	6	2-3			15	3.0 Single	-3	0.5	
	8	1.4-1.8			16	4.0 Single	-3	0.5	
	10	0.8-1.1			16	4.0 Single	-5	0.5	
	12	0.6-0.8			18	5.0 Single	-5.5	0.5	
Brass	1	30-35	4000	N 2	10	2.0 Single	0	0.5	
	2	15-20			10	2.0 Single	-1	0.5	
	3	8-10			12	3.0 Single	-1	0.5	
	4	5.0-6.0			13	3.0 Single	-2	0.5	
	5	2.0-3.0			13	3.5 Single	-2.5	0.5	
	6	2.0-2.5			14	3.5 Single	-3	0.5	
	8	1.0-1.2			14	4.5 Single	-3.5	0.5	
Copper	1	26-30	4000	O2	10	3.0 Single	-1	0.5	
	2	10-13			12	3.0 Single	-1	0.5	
	3	5.5-6.5			12	3.0 Single	-2	0.5	
	4	2.0-3.0			14	3.5 Single	-4	0.5	

Note: When cutting Carbon Steel and Stainless Steel with air and nitrogen, the efficiency and stability will be improved, and the slag hanging phenomenon is also easy to occur with the increase of thickness. The above data parameters may change due to the influence of machine tool, system, cutting head, air pressure, materials and other factors during the actual batch cutting. The red label parameters in the table are sampling parameters, which are greatly affected by various factors in the actual processing, It is only suitable for small batch production. It is not recommended to use large batch production and processing. It is recommended to use higher power lasers. Copper needs to be cut with high-pressure oxygen, and air or

nitrogen is easy to damage the laser.

5.2 Single module MFSC-4000M QBH output fiber core 50μM Perforation reference

5.2.1 MAX MFSC-4000M 25mm Carbon Steel perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Air Pressure bar	Focus mm	Piercing time ms	Stop Light Blowing ms
High Position	4000	45	200	20	0.6	-4	200	
Median	4000	45	200	12	0.6	-6	1500	
Low Position	4000	50	200	8	0.6	-10	1000	

5.2.2 MAX MFSC-4000M 12mm Stainless Steel nitrogen perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Air pressure bar	Focus mm	Piercing time ms	Stop Light Blowing ms
High Position	4000	55	3000	20	10	-2	200	
Median	4000	50	2500	15	10	-4	1500	
Low Position	4000	45	1000	10	10	-8	500	

The perforation parameters take the extreme thickness of Carbon Steel/Stainless Steel that can be penetrated under the current power as an example. The perforation parameters can be adjusted in a wide range, and the parameters such as Cut Power and frequency can be adjusted according to the actual effect to achieve the best effect; The perforations are sorted in order, and the High Position is the first level of perforations, and so on.

Multi module MFMC-6000W-100um Cutting Parameter

6、Multi module MFMC-6000W Cutting Parameter

6.1 MAX MFMC-6000W Integrated QBH output fiber core 100μm Cutting Parameter (collimating 100mm/focusing 150mm)

MFMC-6000W CW laser (100μm)									
Material	Thickness (mm)	Speed (m/min)	Power (W)	Gas	Pressure Bar	Nozzle (mm)	Focus Position (mm)	Cutting Height (mm)	Remarks
Carbon Steel	1	50-55	6000	N2/ Air	10	2.0 Single	0	0.6	1
	2	25-31			12	2.0 Single	0.5	0.5	
	3	15-20			14	3.0 Single	-1.5	0.5	
	4	8-10			14	3.0 Single	-3	0.5	
	5	6-7			16	3.5 Single	3.5	0.5	
	6	5-6			18	3.5 Single	-4	0.5	
	3	3.6-4.2	3000	O	0.6	1.0 double	+6.5	0.6	2
	4	3.3-3.8	3000		0.6	1.0 double	+6.5	0.6	
	5	3-3.5	3500		0.6	1.0 double	+6	0.6	
	6	2.5-3.0	4000		0.6	1.0 double	+6	0.6	
	8	2.2-2.7	5000		0.6	1.2 Double	+6	0.6	
	10	2.0-2.4	6000		0.6	1.2 Double	+7	0.6	
	12	1.8-2.1	6000		0.6	1.2 Double	+9	0.6	
	14	1.4-1.7	6000		0.5	1.4 Double	+12	0.6	
	16	0.9-1.2	2200		0.5	5.0 Double	+3.5	0.6	
	18	0.7-1.0	2200		0.5	5.0 Double	+3.5	1.5	
	20	0.6-0.8	2300		0.5	5.0 Double	+3.5	1.5	
	22	0.55-0.65	2400		0.5	5.0 Double	+3.5	1.5	
	25	0.4-0.6	6000		0.85	1.6 Single	13	0.4	
no	1	55-60	6000	N2	10	2.0 Single	0	0.6	
Stainless Steel	2	28-31			12	2.0 Single	0	0.5	
	3	18-21			12	3.0 Single	-0.5	0.5	

	4	12-14			12	3.0 Single	-1	0.5	
	5	7-9			14	3.0 Single	-1.5	0.5	
	6	6-8			14	4.0 Single	-2	0.5	
	8	3.0-3.8			16	4.0 Single	-4	0.5	
	10	2-2.2			16	4.5 Single	-7.5	0.5	
	12	1.2-1.5			18	4.5 Single	-8	0.5	
	14	1.0-1.2			16	4.5 Single	-10	0.5	
	16	0.8-0.9			18	4.5 Single	-11.5	0.5	
	18	0.7-0.8			18	5.0 Single	-12.5	0.5	
	20	0.6-0.7			18	5.0 Single	-13	0.5	
	22	0.4-0.5			20	6.0 Single	-13	0.5	
	25	0.1-0.2			25	6.0 Single	5	0.5	
Aluminum	1	55-60	6000	N2	10	2.0 Single	0	0.6	
	2	25-28			10	2.0 Single	-0.5	0.5	
	3	14-16			14	3.0 Single	-1	0.5	
	4	10-12			14	3.0 Single	-1.5	0.5	
	5	6-8			15	3.0 Single	-2	0.5	
	6	5-6			16	4.0 Single	-2.5	0.5	
	8	2.5-3.0			16	4.0 Single	-2.5	0.5	
	10	2.0-2.5			18	4.0 Single	-3	0.5	
	12	1.0-1.5			18	4.0 Single	-4	0.5	
	14	0.9-1.1			20	5.0 Single	-5	0.5	
	16	0.8-0.9			20	5.0 Single	-7	0.5	
	18	0.7-0.8			25	5.0 Single	-9	0.5	

	20	0.5-0.7			25	5.0 Single	-10	0.5	
Brass	1	40-50	6000	N 2	10	2.0 Single	0	0.6	
	2	20-25			12	2.0 Single	-0.5	0.5	
	3	8.0-10			12	3.0 Single	-1	0.5	
	4	6.0-7.0			14	3.0 Single	-1.5	0.5	
	5	5.5-6.5			14	4.0 Single	-2	0.5	
	6	5.0-6.0			16	4.0 Single	-2	0.5	
	8	2.5-3.0			16	4.0 Single	-3	0.5	
	10	2.0-2.2			16	4.0 Single	-3	0.5	
	12	1.0-1.3			18	5.0 Single	-7	0.5	
	16	0.8-1.0			18	5.0 Single	-8	0.5	
	20	0.1-0.2			20	5.0 Single	-10	0.5	
Copper	1	28-32	6000	O2	10	3.0 Single	-1	0.5	
	2	11-14			10	3.0 Single	-1	0.5	
	3	6.0-8.0			12	3.5 Single	-2	0.5	
	4	5.5-6.5			12	3.5 Single	-3	0.5	
	5	4.5-5.5			13	4.5 Single	-3	0.5	
	6	2.5-3.5			14	5.0 Single	-4	0.5	
	8	1.5-2.0			16	5.0 Single	-5	0.5	

Note: When cutting Carbon Steel and Stainless Steel with air and nitrogen, the efficiency and stability will be improved, and the slag hanging phenomenon is also easy to occur with the increase of thickness. The above data parameters may change due to the influence of machine tool, system, cutting head, air pressure, materials and other factors during the actual batch cutting. The red label parameters in the table are sampling parameters, which are greatly affected by various factors in the actual processing, It is only suitable for small batch production. It is not recommended to use large batch production and processing. It is recommended to use higher power lasers. Copper needs to be cut with high-pressure oxygen, and air or nitrogen is easy to damage the laser.

6.2 Multi module MFMC-6000W fiber core 100μM Perforation reference

6. 2. 1 MAX MFMC-6000W 25mm Carbon Steel perforation parameters (for reference only)

Stage	Power W	Cut Power%	Frequency Hz	Nozzle Height mm	Air pressure bar	Focus mm	Piercing time ms	Stop light blowing ms
High Position	6000	50	100	20	0.6	-4	200	
Median	6000	45	100	12	0.6	-6	1500	
Low Position	6000	45	300	8	0.7	-10	1000	

6. 2. 2 MAX MFMC-6000W 20mm Stainless Steel nitrogen perforation parameters (for reference only)

Stage	Power W	Cut Power%	Frequency Hz	Nozzle Height mm	Air pressure bar	Focus mm	Piercing time ms	Stop light blowing ms
High Position	6000	55	3000	20	10	-8	200	
Median	6000	45	2500	12	10	-12	1500	
Low Position	6000	45	2000	8	10	-16	1000	

The perforation parameters take the extreme thickness of Carbon Steel/Stainless Steel that can be penetrated under the current power as an example. The perforation parameters can be adjusted in a wide range, and the parameters such as Cut Power and frequency can be adjusted according to the actual effect to achieve the best effect;The perforations are sorted in order, and the High Position is the first level of perforations, and so on.

Single module MFSC-6000W-100um Cutting Parameter

7、Single module MFSC-6000W Cutting Parameter

7.1 MFSC-6000W Integrated QBH output fiber core 100μM Cutting Parameter (collimating 100mm/focusing 150mm)

MFSC-6000W CW laser (100μm)									
Material	Thickness (mm)	Speed (m/min)	Power (W)	Gas	Pressure (bar)	Nozzle (mm)	Focus Position (mm)	Cutting Height (mm)	Remarks
Carbon Steel	1	60-80	6000	N2/ Air	10	2.0 Single	0	0.6	
	2	40-45			12	2.0 Single	-0.5	0.5	
	3	23-28			14	3.0 Single	-1.5	0.5	
	4	15-20			14	3.0 Single	-3	0.5	
	5	10-13			16	3.5 Single	-3.5	0.5	
	6	7-9			18	3.5 Single	-4	0.5	
	3	3.6-4.5	3000	O	0.6	1.0 double	+6.5	0.6	
	4	3.2-3.5	3000		0.6	1.0 double	+6.5	0.6	
	5	2.6-3.2	3500		0.6	1.0 double	+6	0.6	
	6	2.5-2.8	4000		0.6	1.0 double	+6	0.6	
	8	2.2-2.5	5000		0.6	1.2 Double	+6	0.6	
	10	2.0-2.2	6000		0.6	1.2 Double	+7	0.6	
	12	1.8-2.0	6000		0.6	1.2 Double	+9	0.6	
	14	1.4-1.7	6000		0.5	1.4 Double	+12	0.6	
	16	0.9-1.2	2200		0.5	5.0 Double	+3.5	0.6	
	18	0.7-1.0	2200		0.5	5.0 Double	+3.5	1.5	

	20	0.6-0.8	2300		0.5	5.0 Double	+3.5	1.5	
	22	0.55-0.6 5	2400		0.5	5.0 Double	+3.5	1.5	
	25	0.4-0.6	6000		0.85	1.6 Single	13	0.4	
Stainless Steel	1	60-80	6000	N 2	10	2.0 Single	0	0.6	
	2	30-35			12	2.0 Single	0	0.5	
	3	20-24			12	3.0 Single	-0.5	0.5	
	4	13-16			12	3.0 Single	-1	0.5	
	5	9-12			14	3.0 Single	-1.5	0.5	
	6	6.0-8.5			14	4.0 Single	-2	0.5	
	8	3.0-4.8			16	4.0 Single	-4	0.5	
	10	1.8-2.5			16	4.5 Single	-7.5	0.5	
	12	1.5-1.8			18	4.5 Single	-8	0.5	
	14	0.8-1.2			16	4.5 Single	-10	0.5	
	16	0.7-0.9 5			18	4.5 Single	-11.5	0.5	
	18	0.6-0.7			18	5.0 Single	-12.5	0.5	
	20	0.5-0.6			18	5.0 Single	-13	0.5	
	22	0.4-0.5			20	6.0 Single	-13	0.5	
	25	0.1-0.2			25	6.0 Single	5	0.5	
Aluminum	1	60-80	6000	N 2	10	2.0 Single	0	0.6	
	2	30-45			10	2.0 Single	-0.5	0.5	
	3	20-28			14	3.0 Single	-1	0.5	
	4	12-15			14	3.0 Single	-1.5	0.5	
	5	6-8			15	3.0 Single	-2	0.5	

	6	5-6			16	4.0 Single	-2.5	0.5	
	8	3.0-3.5			16	4.0 Single	-2.5	0.5	
	10	2.0-2.5			18	4.0 Single	-3	0.5	
	12	1.0-1.3			18	4.0 Single	-4	0.5	
	14	0.8-1.1			20	5.0 Single	-5	0.5	
	16	0.5-0.8			20	5.0 Single	-7	0.5	
	18	0.4-0.6			25	5.0 Single	-9	0.5	
	20	0.4-0.5 5			25	5.0 Single	-10	0.5	
Brass	1	40-50	6000	N 2	10	2.0 Single	0	0.6	
	2	20-25			12	2.0 Single	-0.5	0.5	
	3	8.0-10			12	3.0 Single	-1	0.5	
	4	6.5-7.5			14	3.0 Single	-1.5	0.5	
	5	5.5-6.5			14	4.0 Single	-2	0.5	
	6	5.0-6.0			16	4.0 Single	-2	0.5	
	8	3.0-4.0			16	4.0 Single	-3	0.5	
	10	2.0-2.5			16	4.0 Single	-3	0.5	
	12	1.0-1.5			18	5.0 Single	-7	0.5	
	16	0.7-1.0			20	5.0 Single	-9	0.5	
	20	0.1-0.2			20	5.0 Single	-10	0.5	
Copper	1	30-35	6000	O ₂	10	3.0 Single	-1	0.5	
	2	12-15			10	3.0 Single	-1	0.5	
	3	7.0-9.0			12	3.0 Single	-2	0.5	
	4	6.0-7.0			12	3.5 Single	-3	0.5	
	5	5.0-6.0			13	4.5 Single	-4	0.5	

6	2.5-3.5	14	5.0 Single	-5	0.5
8	1.5-2.0	14	5.0 Single	-5	0.5

Note: When cutting Carbon Steel and Stainless Steel with air and nitrogen, the efficiency and stability will be improved, and the slag hanging phenomenon is also easy to occur with the increase of thickness. The above data parameters may change due to the influence of machine tool, system, cutting head, air pressure, materials and other factors during the actual batch cutting. The red label parameters in the table are sampling parameters, which are greatly affected by various factors in the actual processing, It is only suitable for small batch production. It is not recommended to use large batch production and processing. It is recommended to use higher power lasers. Copper needs to be cut with high-pressure oxygen, and air or nitrogen is easy to damage the laser.

7.2 Single module MFSC-6000W fiber core 100μM Perforation reference

7.2.2 MAX MFSC-6000W 25mm Carbon Steel perforation parameters (for reference only)

Stage	Power W	Cut Power%	Frequency Hz	Nozzle Height mm	Air pressure bar	Focus mm	Piercing time ms	Stop light blowing ms
High Position	6000	50	100	20	0.6	-4	200	
Median	6000	45	100	12	0.6	-6	1500	
Low Position	6000	45	300	8	0.7	-10	1000	

7.2.2 MAX MFSC-6000W 20mm Stainless Steel nitrogen perforation parameters (for reference only)

Stage	Power W	Cut Power%	Frequency Hz	Nozzle Height mm	Air pressure bar	Focus mm	Piercing time ms	Stop light blowing ms
High Position	6000	55	3000	20	10	-8	200	
Median	6000	45	2500	12	10	-12	1500	
Low Position	6000	45	2000	8	10	-16	1000	

The perforation parameters take the extreme thickness of Carbon Steel/Stainless Steel that can be penetrated under the current power as an example. The perforation parameters can be adjusted in a wide range, and the parameters such as Cut Power and frequency can be adjusted according to the actual effect to achieve the best effect; The perforations are sorted in order, and the High Position is the first level of perforations, and so on.

Multi module MFMC-8000W-100um Cutting Parameter

8、Multi module MFMC-8000W Cutting Parameter

8.1 MAX MFMC-8000W integrated QBH fiber core 100μm Cutting Parameter (collimating 100mm/focusing 200mm)

MFMC-8000W CW laser (100μm)									
Material	Thickness (mm)	Speed (m/min)	Power (W)	G as	Pressure (bar)	Nozzl e (mm)	Focus Position (mm)	Cutting Height (mm)	Remarks
Carbon Steel	1	55-60	8000	N2/ Air	10	2.0 Single	0	0.6	1
	2	30-35			12	2.0 Single	0	0.5	
	3	20-25			13	3.0 Single	-1	0.5	
	4	15-20			15	3.0 Single	-1.5	0.5	
	5	10-14			15	3.5 Single	-2	0.5	
	6	7-9			16	4.0 Single	-3	0.5	
	8	4.5-6.5			16	4.5 Single	-4	0.5	
	8	2.3-2.5	4000	O ₂	0.6	1.2 Double	+6	0.6	2
	10	2.0-2.3	5000		0.6	1.2 Double	+7	0.6	
	12	1.8-2.1	6000		0.6	1.2 Double	+8	0.6	
	14	1.7-1.9	8000		0.6	1.4 Double	+9	0.6	
	16	1.5-1.6			0.6	1.4 Double	+10	0.6	
	20	1.0-1.3			0.6	1.6 pairs	+12	0.6	
	22	0.6-0.8			0.7	1.6 pairs	+13	0.7	
	25	0.4-0.5			0.7	1.8 pairs	+14	0.7	
	30	0.2-0.3			1.3	1.8 pairs	+13	1	

Stainless Steel	1	55-65	8000	N 2	10	2.0 Single	0	0.6	
	2	35-40			12	2.0 Single	0	0.5	
	3	24-30			12	3.0 Single	0	0.5	
	4	15-22			13	3.0 Single	-1	0.5	
	5	12-16			15	4.0 Single	-2	0.5	
	6	8-10			15	4.0 Single	-2.5	0.5	
	8	5-7			16	4.5 Single	-3.5	0.5	
	10	3.5-5			18	4.5 Single	-4.5	0.5	
	12	2-3			18	5.0 Single	-6	0.5	
	14	1.5-2.0			18	5.0 Single	-7	0.5	
	16	1-1.4			20	5.0 Single	-8	0.5	
	18	0.9-1.2			22	5.0 Single	-9.5	0.5	
	20	0.8-0.9			25	5.0 Single	-11	0.5	
	25	0.3-0.5			25	5.0 Single	+8	0.5	
Aluminum	1	35-45	8000		10	2.0 Single	0	0.6	
	2	25-30			12	2.0 Single	-1	0.5	
	3	16-20			12	3.0 Single	-1	0.5	
	4	10-13			13	3.0 Single	-3	0.5	
	5	6-7.5			14	3.5 Single	-4	0.5	
	6	5.0-6.5			14	3.5 Single	-4	0.5	
	8	3-4			16	4.5 Single	-6	0.5	
	10	2-3			16	4.5 Single	-7	0.5	
	12	1.5-2.0			18	5.0 Single	-8	0.5	

	14	1.2-1.5		N 2	18	5.0 Single	-9	0.5	
	16	0.8-1.0			20	5.0 Single	-10	0.5	
	18	0.6-0.8			25	5.0 Single	-11	0.5	
	20	0.4-0.6			25	5.0 Single	-13	0.5	
	25	0.3-0.4			25	5.0 Single	-16	0.5	
Brass	1	38-45	8000	N 2	10	2.0 Single	0	0.6	
	2	25-28			12	2.0 Single	-1	0.5	
	3	15-20			12	3.0 Single	-1	0.5	
	4	10-12			12	3.0 Single	-2	0.5	
	5	6-8			14	3.0 Single	-3	0.5	
	6	5-6			16	3.5 Single	-4	0.5	
	8	2.8-3.5			16	4.5 Single	-5	0.5	
	10	2.0-2.5			18	5.0 Single	-6	0.5	
	12	1.5-2.0			18	5.0 Single	-8	0.5	
	14	0.8-1.3			20	5.0 Single	-9	0.5	
	16	0.6-1.0			25	5.0 Single	-11	0.5	
Copper	1	30-35	8000	O2	10	3.0 Single	-1	0.5	3
	2	16-20			10	3.0 Single	-1	0.5	
	3	10-14			12	3.0 Single	-2	0.5	
	4	6.0-8.0			12	3.5 Single	-3	0.5	
	5	5.0-6.0			14	4.5 Single	-4	0.5	
	6	3.0-4.0			14	5.0 Single	-4	0.5	
	8	1.8-2.5			14	5.0 Single	-5	0.5	
	10	0.7-1.0			16	5.0 Single	-5	0.5	

Note: When cutting Carbon Steel and Stainless Steel with air and nitrogen, the efficiency and stability will be improved, and the slag hanging phenomenon is also easy to occur with the increase of thickness. The above data parameters may change due to the influence of machine tool, system, cutting head, air pressure, materials and other factors during the actual batch cutting. The red label parameters in the table are sampling parameters, which are greatly affected by various factors in the actual processing, It is only suitable for small batch production. It is not recommended to use large batch production and processing. It is recommended to use higher power lasers. Copper needs to be cut with high-pressure oxygen, and air or nitrogen is easy to damage the laser.

8.2 Multi module MFMC-8000W integrated QBH fiber core 100μM Perforation reference

8.2.1 MAX MFMC-8000W 20mm Carbon Steel perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Pressure bar	Focus mm	Perforation Time ms	Stop Light Blowing ms
High Position	8000	45	100	20	0.6	-2	200	
Median	8000	45	100	12	0.6	-4	1500	
Low Position	8000	55	100	8	0.6	-6	500	

8.2.2 MAX MFMC-8000W 30mm Carbon Steel perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Pressure bar	Focus mm	Perforation Time ms	Stop Light Blowing ms
High Position	8000	45	100	20	0.6	-4	200	
Median	8000	45	100	12	0.7	-6	2500	
Low Position	8000	55	120	8	0.6	-10	1500	

8.2.3 MAX MFMC-8000W 20mm Stainless Steel nitrogen perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Pressure bar	Focus mm	Perforation Time ms	Stop Light Blowing ms
High Position	8000	55	2500	20	8	-6	200	
Median	8000	45	2500	15	8	-8	2000	
Low Position	8000	40	2000	10	8	-12	500	

8.2.4 MAX MFMC-8000W 30mm Stainless Steel oxygen perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Pressure bar	Focus mm	Perforation Time ms	Stop Light Blowing ms
High Position	8000	45	150	20	0.6	-6	500	
Median	8000	45	150	12	0.6	-8	2500	
Low Position	8000	55	200	8	0.6	-12	1000	

The perforation parameters take the extreme thickness of Carbon Steel/Stainless Steel that can be penetrated under the current power as an example. The perforation parameters can be adjusted in a wide range, and the parameters such as Cut Power and frequency can be adjusted according to the actual effect to achieve the best effect; The perforations are sorted in order, and the High Position is the first level of perforations, and so on.

Multi module MFMC-12000W-100um Cutting Parameter

9、 Multi module MFMC-12000W integrated LOE output Cutting Parameter

9.1 MAX MFMC-12000W fiber core 100μm Cutting Parameter (collimating 100mm/focusing 200mm)

MFMC-12000W CW laser (100μm)									
Material	Thickness (mm)	Speed (m/min)	Power (W)	Gas	Pressure (bar)	Nozzle (mm)	Focus Position (mm)	Cutting Height (mm)	Remarks
Carbon Steel	1	50-60	12000	N2/ Air	10	2.0 Single	0	1	1
	2	33-43			12	2.0 Single	0	0.5	
	3	28-36			13	3.0 Single	0	0.5	
	4	18-24			13	3.5 Single	0	0.5	
	5	14-18			13	4.0 Single	0	0.5	
	6	10-14			13	4.5 Single	0	0.5	
	8	8-10			13	4.5 Single	-1.5	0.5	
	10	6-8			13	4.5 Single	-3	0.5	
	10	2.2-2.4	6000	O	0.6	1.2 Double	+8	0.6	2
	12	1.8-2.1	7500		0.6	1.2 Double	+9	0.6	
	14	1.7-1.9	8500		0.6	1.4 Double	+9	0.6	
	16	1.6-1.8	9500		0.6	1.4 Double	+11	0.6	
	20	1.4-1.6	12000		0.6	1.6 pairs	+12	0.6	
	22	1.2-1.3			0.7	1.6 pairs	+12	0.6	
	25	0.8-1.0			0.7	1.4 Single	+13	0.6	
	30	0.5-0.8			1	Sheet 1.7	+13	0.5	
	40	0.2-0.3			1.3	Sheet 1.7	+13	0.5	

Stainless Steel	1	60-70	12000	N 2	10	2.0 Single	0	1	
	2	35-45			12	2.0 Single	0	0.5	
	3	30-35			13	3.0 Single	-0.5	0.5	
	4	20-26			12	3.0 Single	-1	0.5	
	5	15-20			12	3.5 Single	-1	0.5	
	6	12-15			12	4.0 Single	-1.5	0.5	
	8	9-11			13	5.0 Single	-3	0.5	
	10	7-8			14	5.0 Single	-3	0.5	
	12	4-4.5			14	5.0 Single	-3.5	0.5	
	14	3-3.5			15	5.0 Single	-6	0.3	
	16	2.3-2.6			15	5.0 Single	-8	0.3	
	18	1.6-1.8			16	5.0 Single	-9	0.5	
	20	1.3-1.5			18	5.0 Single	-10	0.5	
	25	0.8-1			25	5.0 Single	-13	0.5	
	30	0.25-0.35			25	5.0 Single	+7	0.5	
	40	0.1-0.2			25	5.0 Single	+8	0.5	
Stainless Steel air	1	60-70	12000	Air	10	2.0 Single	0	1	
	2	35-45			12	2.0 Single	0	0.5	
	3	30-35			13	3.0 Single	-0.5	0.5	
	4	20-26			12	3.0 Single	-1	0.5	
	5	15-20			12	3.5 Single	-1	0.5	
	6	12-15			12	4.0 Single	-1.5	0.5	
	8	9-11			13	5.0 Single	-3	0.5	
	10	7-8			14	5.0 Single	-3	0.5	

	12	4-4.5			14	5.0 Single	-3.5	0.5	
	14	3-3.5			15	5.0 Single	-6	0.3	
	16	2.3-2.6			15	5.0 Single	-8	0.3	
	18	1.6-1.8			16	5.0 Single	-9	0.5	
	20	1.3-1.5			18	5.0 Single	-10	0.5	
	25	0.8-1			25	5.0 Single	-13	0.5	
	30	0.25-0.35			25	5.0 Single	+7	0.5	
Aluminum	1	50-60	12000	N2	12	2.0 Single	0	0.6	
	2	35-40			12	2.0 Single	-1	0.5	
	3	25-30			12	2.0 Single	-1	0.5	
	4	18-23			12	2.0 Single	-2	0.5	
	5	14-17			14	2.5 Single	-3	0.5	
	6	10-12			14	2.5 Single	-4	0.5	
	8	7-8			14	2.5 Single	-6	0.5	
	10	5-6			14	5.0 Single	-7	0.5	
	12	2.6-3.5			16	5.0 Single	-7	0.5	
	14	1.7-2.5			16	5.0 Single	-8	0.5	
	16	1.6-2.0			16	5.0 Single	-9	0.5	
	18	1.2-1.5			16	5.0 Single	-10	0.5	
	20	1-1.3			16	5.0 Single	-12	0.3	
	25	0.6-0.8			25	5.0 Single	-13	0.5	
	30	0.3-0.4			25	5.0 Single	+7	0.5	
	40	0.2-0.3			25	5.0 Single	+8	0.5	

Brass	1	40-50	12000	N2	10	2.0 Single	0	0.6	
	2	30-35			12	2.0 Single	-1	0.5	
	3	22-25			12	3.0 Single	-1	0.5	
	4	17-20			12	3.0 Single	-2	0.5	
	5	14-16			14	3.5 Single	-3	0.5	
	6	9-11			14	4.0 Single	-3	0.5	
	8	7-8			14	4.5 Single	-4	0.5	
	10	4.5-5.5			14	4.5 Single	-5	0.5	
	12	2.4-3.0			14	4.5 Single	-5	0.5	
	14	1.4-2.0			16	5.0 Single	-8	0.5	
	16	0.8-1.0			16	5.0 Single	-11	0.5	
Copper oxygen	1	30-35	12000	O ₂	10	2.0 Single	-0.5	0.6	3
	2	20-25			12	2.0 Single	-1	0.5	
	3	16-20			13	3.0 Single	-2	0.5	
	4	10-13			13	3.5 Single	-3	0.5	
	5	7-10			13	4.0 Single	-4.5	0.5	
	6	4.5-5.5			14	4.5 Single	-5	0.5	
	8	2.5-3.0			16	4.5 Single	-6	0.5	
	10	1.0-1.5			18	4.5 Single	-8	0.5	

Note: When cutting Carbon Steel and Stainless Steel with air and nitrogen, the efficiency and stability will be improved, and the slag hanging phenomenon is also easy to occur with the increase of thickness. The above data parameters may change due to the influence of machine tool, system, cutting head, air pressure, materials and other factors during the actual batch cutting. The red label parameters in the table are sampling parameters, which are greatly affected by various factors in the actual processing, it is only suitable for small batch production. It is not recommended to use large batch production and processing. It is recommended to use higher power lasers. Copper needs to be cut with high-pressure oxygen, and air or nitrogen is easy to damage the laser.

9.2 Multi module MFMC-12000W fiber core 100μM Perforation reference

9.2.1 MAX MFMC-12000W 20mm Carbon Steel perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Air pressure bar	Focus mm	Piercing time ms	Stop Light Blowing ms
High Position	12000	45	100	20	0.6	-4	200	
Median	12000	45	100	12	0.6	-6	1000	
Low Position	5000	55	100	8	0.6	-10	300	

9.2.2 MAX MFMC-12000W 30mm Carbon Steel perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Pressure bar	Focus mm	Perforation Time ms	Stop Light Blowing ms
High Position	12000	45	100	20	0.6	-4	200	
Median	12000	45	100	12	0.6	-8	2500	
Low Position	12000	45	150	8	0.7	-12	500	

9.2.3 MAX MFMC-12000W 20mm Stainless Steel nitrogen perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Air pressure bar	Focus mm	Piercing time ms	Stop Light Blowing ms
High Position	12000	35	2500	20	8	-2	150	
Median	12000	45	2500	12	8	-4	1000	
Low Position	12000	45	1000	8	8	-6	500	

9. 2. 4 MAX MFMC-12000W 30mm Stainless Steel oxygen perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Air pressure bar	Focus mm	Piercing time ms	Stop Light Blowing ms
High Position	1200	45	100	20	0.8	-6	500	
Median	12000	45	150	12	0.8	-8	2500	
Low Position	12000	45	150	10	0.8	-12	500	

The perforation parameters take the extreme thickness of Carbon Steel/Stainless Steel that can be penetrated under the current power as an example. The perforation parameters can be adjusted in a wide range, and the parameters such as Cut Power and frequency can be adjusted according to the actual effect to achieve the best effect; The perforations are sorted in order, and the High Position is the first level of perforations, and so on.

10、 Multi module MFMC-15000W integrated LOE output Cutting Parameter

10.1 MAX MFMC-15000W fiber core 100μm Cutting Parameter (collimating 100mm/focusing 200mm)

MAX MFMC-15000 CW laser (100μm)									
Material	Thickness (mm)	Speed (m/min)	Power (W)	Gas	Pressure (bar)	Nozzle (mm)	Focus Position (mm)	Cutting Height (mm)	Remarks
Carbon Steel	1	60-80	15000	N2 / Air	10	2.0 Single	0	1	1
	2	50-60			10	2.0 Single	0	0.5	
	3	30-33			12	3.0 Single	0	0.5	
	4	23-26			12	3.0 Single	0	0.5	
	5	20-22			12	3.5 Single	0	0.5	
	6	17-19			12	3.5 Single	0	0.5	
	8	11-12			12	4.0 Single	-1	0.5	

	10	8-10			13	4.0 Single	-1	0.5	
	12	5-6			13	4.5 Single	-2	0.5	
	14	4.0-4.5			15	4.5 Single	-6	0.5	
	16	3-3.5			16	5.0 Single	-8	0.5	
	10	2.0-2.3	6000	O	0.6	1.2 Double	+8	0.5	2
	12	1.8-2.1	7500		0.6	1.2 Double	+8	0.5	
	14	1.7-1.8	8500		0.6	1.4 Double	+9	0.5	
	16	1.6-1.7	9500		0.6	1.4 Double	+10	0.5	
	20	1.4-1.6	15000		0.6	1.6 pairs	+12	0.5	
	22	1.2-1.4			0.7	1.6 pairs	+12	0.5	
	25	1.0-1.2			0.7	1.4 Single	+13	0.3	
	30	0.4-1			0.9	1.6 Single	+12	0.3	
	40	0.2-0.3			1.3	1.8 Single	+13	0.3	
	50	0.1-0.2			1.5	1.8 Single	+13	0.3	
Stainless Steel	1	60-80	15000	N 2	10	2.0 Single	0	1	
	2	40-50			12	2.0 Single	0	0.5	
	3	34-38			13	3.5 Single	0	0.5	
	4	23-30			12	3.5 Single	-1	0.5	
	5	18-23			13	4.0 Single	-1	0.5	
	6	16-19			13	4.5 Single	-2	0.5	
	8	12-15			13	5.0 Single	-3	0.5	
	10	8-10			14	5.0 Single	-4	0.5	
	12	6-7			15	5.0 Single	-5	0.5	

	14	3.5-4.5			15	5.0 Single	-7	0.5	
	16	2.5-3.5			16	5.0 Single	-8	0.5	
	18	1.8-2.3			18	5.0 Single	-9	0.5	
	20	1.5-2.0			20	5.0 Single	-11	0.5	
	25	0.9-1.2			25	5.0 Single	-13	0.5	
	30	0.3-0.4			25	5.0 Single	-16	0.5	
	40	0.15-0.2			25	5.0 Single	+8	0.5	
	50	0.1-0.15			25	5.0 Single	+9	0.5	
Stainless Steel air	1	60-80	15000	Air	10	3.0 Single	-1	1	
	2	40-60			12	3.0 Single	-1	0.5	
	3	30-35			13	3.5 Single	-1	0.5	
	4	25-28			14	3.5 Single	-2	0.5	
	5	22-25			16	4.0 Single	-4	0.5	
	6	18-20			16	4.5 Single	-4	0.5	
	8	15-18			16	4.5 Single	-4	0.5	
	10	10-15			16	4.5 Single	-5	0.5	
	12	8-12			18	4.5 Single	-6	0.5	
	14	5.0-6.0			18	5.0 Single	-8	0.5	
	16	4.0-5.0			20	5.0 Single	-10	0.5	
	18	2.5-3.5			20	5.0 Single	-10	0.5	
	20	2.0-3.0			25	5.0 Single	-15	0.5	
	25	1.2-1.6			25	6.0 Single	-19	0.5	
	30	1.0-1.3			25	6.0 Single	-21	0.5	
	35	0.8-1.0			25	6.0 Single	-24	0.5	

Aluminum	1	60-70	15000	N 2	10	3.0 Single	0	0.6	
	2	40-50			12	3.0 Single	-1	0.5	
	3	34-40			14	3.0 Single	-1	0.5	
	4	21-26			14	3.5 Single	-2	0.5	
	5	16-20			14	3.5 Single	-3	0.5	
	6	13-17			14	4.0 Single	-4	0.5	
	8	10-13			16	4.0 Single	-6	0.5	
	10	6-8			16	4.5 Single	-7	0.5	
	12	4-6			16	4.5 Single	-9	0.5	
	14	3-4			16	5.0 Single	-9	0.5	
	16	2-3			18	5.0 Single	-10	0.5	
	18	1.5-2			18	5.0 Single	-11	0.5	
	20	1-1.5			20	5.0 Single	-13	0.3	
	25	0.8-1.0			25	5.0 Single	-14	0.5	
	30	0.7-0.9			25	5.0 Single	-17	0.5	
	40	0.2-0.3			25	5.0 Single	+8	0.5	
	50	0.1-0.2			25	5.0 Single	+9	0.5	
Brass	1	50-60	15000	N 2	12	2.0 Single	0	1	
	2	38-42			12	2.0 Single	-1	0.5	
	3	30-33			12	3.0 Single	-1	0.5	
	4	26-28			12	3.5 Single	-2	0.5	
	5	18-21			14	3.5 Single	-3	0.5	
	6	13-15			14	4.0 Single	-3	0.5	
	8	7-9			14	4.0 Single	-4	0.5	

	10	5-6	15000	O ₂	14	4.5 Single	-5	0.5	
	12	3-3.5			14	4.5 Single	-5	0.5	
	14	2.5-3.0			16	4.5 Single	-8	0.5	
	16	1.3-1.5			18	5.0 Single	-11	0.5	
	18	1.0-1.2			18	5.0 Single	-11	0.5	
	20	0.6-0.8			18	5.0 Single	-12	0.3	
Copper oxygen	1	38-42			10	2.0 Single	-0.5	0.6	3
	2	28-32			10	2.0 Single	-1	0.5	
	3	25-28			10	3.0 Single	-2	0.5	
	4	17-20			12	3.5 Single	-3	0.5	
	5	13-15			12	3.5 Single	-4.5	0.5	
	6	8-10			13	4.0 Single	-5	0.5	
	8	5-6			13	4.0 Single	-6	0.5	
	10	1.5-2.0			14	4.0 Single	-8	0.5	

Note: When cutting Carbon Steel and Stainless Steel with air and nitrogen, the efficiency and stability will be improved, and the slag hanging phenomenon is also easy to occur with the increase of thickness. The above data parameters may change due to the influence of machine tool, system, cutting head, air pressure, materials and other factors during the actual batch cutting. The red label parameters in the table are sampling parameters, which are greatly affected by various factors in the actual processing, it is only suitable for small batch production. It is not recommended to use large batch production and processing. It is recommended to use higher power lasers. Copper needs to be cut with high-pressure oxygen, and air or nitrogen is easy to damage the laser.

10.2 Multi module MFMC-15000W fiber core 100μm Perforation reference

10.2.1 MAX MFMC-15000W 20mm Carbon Steel perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Pressure bar	Focus mm	Perforation Time ms	Stop Light Blowing ms
High Position	12000	45	100	20	0.6	-2	200	
Median	15000	45	100	12	0.6	-4	800	
Low Position	8000	35	150	8	0.6	-6	200	

10.2.2 MAX MFMC-15000W 30mm Carbon Steel perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Pressure bar	Focus mm	Perforation Time ms	Stop Light Blowing ms
High Position	12000	45	100	20	0.6	-4	200	
Median	15000	45	100	12	0.6	-8	2000	
Low Position	15000	55	120	8	0.7	-10	1000	

10.2.3 MAX MFMC-15000W 20mm Stainless Steel nitrogen perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Pressure bar	Focus mm	Perforation Time ms	Stop Light Blowing ms
High Position	15000	45	80	20	6	-2	150	
Median	15000	35	100	15	8	-4	1000	
Low Position	15000	45	80	10	8	-6	500	

10.2.4 MAX MFMC-15000W 30mm Stainless Steel oxygen perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Pressure bar	Focus mm	Perforation Time ms	Stop Light Blowing ms
High Position	10000	55	2500	20	6	-10	500	
Median	15000	45	2500	14	8	-16	2500	
Low Position	12000	55	2000	10	8	-20	500	

The perforation parameters take the extreme thickness of Carbon Steel/Stainless Steel that can be penetrated under the current power as an example. The perforation parameters can be adjusted in a wide range, and the parameters such as Cut Power and frequency can be adjusted according to the actual effect to achieve the best effect; The perforations are sorted in order, and the High Position is the first level of perforations, and so on.

Multi module MFMC-20000W-150um Cutting Parameter

11、 Multi module MFMC-20000W Cutting Parameter

11.1 MAX MFMC-20000W integrated LOE fiber core 150μm Cutting Parameter (collimating 100mm/focusing 200mm)

MFMC-20000W CW laser (150μm)									
Material	Thickness (mm)	Speed (m/min)	Power (W)	Gas	Pressure (bar)	Nozzle (mm)	Focus Position (mm)	Cutting Height (mm)	Remarks
Carbon Steel	1	60-80	20000	N2/ Air	10	3.5 Single	0	0.5	1
	2	40-50			10	3.5 Single	0	0.5	
	3	35-45			10	3.5 Single	0	0.5	
	4	28-35			10	3.5 Single	-0.5	0.5	
	5	23-30			10	3.5 Single	-0.5	0.5	
	6	18-23			12	3.5 Single	-0.5	0.5	
	8	13-16			13	4.5 Single	-1	0.5	
	10	10-13			13	4.5 Single	-1.5	0.5	
	12	7-8			14	4.5 Single	-2	0.5	
	14	5.5-6.5			16	4.5 Single	-3	0.5	
	16	4.0-4.5			25	5.0 Single	-4	0.5	
	18	3.2-3.5			25	5.0 Single	-6	0.5	
	20	2.6-3.0			25	6.0 Single	-10	0.5	
	10	2.2-2.5	6000		0.6	1.2 Double	+8	0.6	
	12	1.9-2.1	6500		0.6	1.2 Double	+9	0.6	
	14	1.8-1.9	8000		0.6	1.4 Double	+10	0.6	
	16	1.6-1.8	8500		0.6	1.4 Double	+11	0.6	

	18	1.5-1.7	12000	O	0.6	1.6 pairs	+12	0.6	2
	20	1.4-1.6	12000		0.6	1.6 pairs	+12	0.6	
	22	1.3-1.5	20000		0.7	1.6 pairs	+12	0.6	
	25	1.2-1.4			1.0	1.4 Single	+12	0.3	
	30	1.1-1.3			1.2	1.6 Single	+13.5	0.3	
	35	1.0-1.2			0.8	1.6 Single	+14	0.3	
	40	0.6-0.8			1.0	1.6 Single	+14	0.3	
	50	0.3-0.5			1.3	1.8 Single	+14	1.5	
	60	0.1-0.2			1.6	1.8 Single	+14	1.5	
	70	0.1-0.2			1.6	1.8 Single	+14	1.5	
	80	0.1-0.2			1.6	1.8 Single	+14	1.5	
no	1	60-80	20000	N 2	10	3.0 Single	0	1	
Stainless Steel	2	45-55			10	3.0 Single	0	0.5	
	3	35-40			10	3.0 Single	0	0.5	
	4	30-35			12	3.5 Single	0	0.5	
	5	23-28			12	3.5 Single	0	0.5	
	6	18-22			13	4.5 Single	-1	0.5	
	8	14-16			13	4.5 Single	-3	0.5	
	10	11-13			14	4.5 Single	-3	0.3	
	12	8-10			14	4.5 Single	-4	0.5	
	14	5.5-6.5			14	4.5 Single	-6	0.5	
	16	4.5-5.5			16	5.0 Single	-8	0.5	
	18	3.5-4.5			18	5.0 Single	-8	0.5	

	20	2.8-3.3			20	5.0 Single	-9	0.5	
	25	1.7-2.0			25	6.0 Single	-13	0.5	
	30	1.0-1.3			25	6.0 Single	-15	0.5	
	35	0.5-0.8			25	7.0 Single	-17	0.5	
	40	0.3-0.5			25	5.0 Single	+8	0.3	
	50	0.1-0.2			25	5.0 Single	+9	0.3	
	60	0.1-0.2			25	6.0 Single	+9	0.3	
	70	0.1-0.15			25	8.0 Single	+9	0.3	
	80	0.1-0.15			25	8.0 Single	+9	0.3	
	90	0.05-0.1			25	8.0 Single	+9	0.3	
	100	0.05-0.1			25	8.0 Single	+9	0.3	
Stainless Steel	1	60-80	20000	Air	8	2.0 Single	0	1	
	2	50-60			8	2.0 Single	0	0.5	
	3	40-45			10	3.0 Single	-1	0.5	
	4	35-39			10	3.0 Single	-1	0.5	
	5	25-30			11	3.5 Single	-1	0.5	
	6	22-26			11	3.5 Single	-2	0.5	
	8	15-18			12	4.0 Single	-2	0.5	
	10	12-14			13	4.0 Single	-3	0.3	
	12	10-11			13	4.5 Single	-3.5	0.3	
	14	6.5-7.5			14	4.5 Single	-3.5	0.3	
	16	5.0-5.8			16	4.5 Single	-7	0.3	
	18	3.8-4.5			20	4.5 Single	-9	0.3	
	20	3.0-3.5			20	5.0 Single	-10	0.3	

	25	1.5-2.0			25	5.0 Single	-13	0.3	
	30	1.0-1.3			35	5.0 Single	-15	0.3	
	40	0.5-0.6			25	6.0 Single	-17	0.3	
	50	0.1-0.2			25	6.0 Single	+9	0.3	
	60	0.1-0.2			25	8.0 Single	+9	0.3	
	70	0.1-0.15			35	8.0 Single	+9	0.3	
Aluminum	1	60-80	20000	N 2	8	3.0 Single	0	0.5	
	2	50-60			8	3.0 Single	0	0.5	
	3	35-45			8	3.0 Single	-1	0.5	
	4	30-40			8	3.0 Single	-1	0.5	
	5	20-25			10	4.5 Single	-2	0.5	
	6	15-22			10	4.5 Single	-2	0.5	
	8	14-20			10	5.0 Single	-3	0.5	
	10	8.0-10			10	5.0 Single	-3	0.5	
	12	7.0-8.0			10	5.0 Single	-4	0.5	
	14	4.0-6.0			12	5.0 Single	-5	0.5	
	16	3.0-4.5			14	5.0 Single	-6	0.5	
	18	2.3-3.0			14	5.0 Single	-6	0.5	
	20	2.0-2.3			16	5.0 Single	-7	0.5	
	25	1.0-1.5			18	6.0 Single	-8	0.5	
	30	0.6-0.8			20	6.0 Single	-8	0.5	
	40	0.3-0.6			25	6.0 Single	8	0.5	
	50	0.3-0.4			28	6.0 Single	8	0.5	
	60	0.2-0.3			28	6.0 Single	8	0.5	

Brass	1	50-60	20000	N 2	10	3.0 Single	0	0.5	
	2	35-45			10	3.5 Single	0	0.5	
	3	28-35			10	3.5 Single	0	0.5	
	4	23-28			10	3.5 Single	-1	0.5	
	5	15-20			12	4.5 Single	-1	0.5	
	6	12-15			12	4.5 Single	-1.5	0.5	
	8	8.0-10			12	5.0 Single	-2	0.5	
	10	5.0-7.0			13	5.0 Single	-3	0.5	
	12	3.5-5.5			14	5.0 Single	-3	0.5	
	14	3.0-4.5			14	5.0 Single	-4	0.5	
	16	2.0-3.0			14	5.0 Single	-5	0.5	
	18	1.0-1.5			16	5.0 Single	-6	0.5	
	20	0.7-0.9			18	6.0 Single	-6.5	0.5	
Copper	1	30-40	20000	O	8	3.0 Single	0	0.5	3
	2	22-30			8	3.0 Single	0	0.5	
	3	20-25			8	3.5 Single	0	0.5	
	4	15-18			10	3.5 Single	-1	0.5	
	5	12-14			10	5.0 Single	-1	0.5	
	6	7.0-9.0			10	5.0 Single	-2	0.5	
	8	4.5-5.5			10	5.0 Single	-3	0.5	
	10	3.0-3.5			12	5.0 Single	-4	0.5	
	12	2.0-2.5			14	5.0 Single	-5	0.5	

Note: When cutting Carbon Steel and Stainless Steel with air and nitrogen, the efficiency and stability will be improved, and the slag hanging phenomenon is also easy to occur with the increase of thickness. The above data parameters may change due to the influence of machine tool, system, cutting head, air pressure, materials and other factors during the actual batch cutting. The red label parameters in the table are sampling parameters, which are greatly affected by various factors in the actual processing, it is only suitable for small batch production. It is not recommended to use large batch production and processing. It is recommended to use higher power lasers. Copper needs to be cut with high-pressure oxygen, and air or nitrogen is easy to damage the laser.

11.2 Multi module MFMC-20000W fiber core 150μm Perforation reference

11.2.1 MAX MFMC-20000W 30mm Carbon Steel perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Pressure bar	Focus mm	Perforation Time ms	Stop Light Blowing ms
High Position	15000	45	150	20	0.6	-4	200	
Median	15000	45	100	12	0.6	-6	1000	
Low Position	20000	55	100	8	0.6	-8	200	

11.2.2 MAX MFMC-20000W 40mm Carbon Steel perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Pressure bar	Focus mm	Perforation Time ms	Stop Light Blowing ms
High Position	20000	45	100	20	0.6	-6	200	
Median	20000	45	150	12	0.7	-8	2500	
Low Position	15000	50	150	8	0.7	-12	500	

11.2.3 MAX MFMC-20000W 30mm Stainless Steel nitrogen perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Pressure bar	Focus mm	Perforation Time ms	Stop Light Blowing ms
High Position	20000	55	2500	20	6	-8	200	
Median	20000	45	2500	15	8	-12	1500	
Low Position	20000	45	80	10	8	-16	500	

11.2.4 MAX MFMC-20000W 30mm Stainless Steel oxygen perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Pressure bar	Focus mm	Perforation Time ms	Stop Light Blowing ms
High Position	20000	45	100	20	0.6	-6	200	
Median	20000	45	100	12	0.8	-8	2000	
Low Position	12000	55	100	10	0.8	-12	500	

The perforation parameters take the extreme thickness of Carbon Steel/Stainless Steel that can be penetrated under the current power as an example. The perforation parameters can be adjusted in a wide range, and the parameters such as Cut Power and frequency can be adjusted according to the actual effect to achieve the best effect;The perforations are sorted in order, and the High Position is the first level of perforations, and so on.

Multi module MFMC-20000W-100um Cutting Parameter

12、 Multi module MFMC-20000W Cutting Parameter

12.1 MAX MFMC-20000W integrated LOE fiber core 100μM Cutting Parameter (collimating 100mm/focusing 200mm)

MFMC-20000W CW laser (100μm)									
Material	Thickness (mm)	Speed (m/min)	Power (W)	Gas	Pressure (bar)	Injector (mm)	Focus position	Cutting Height (mm)	Remarks

Carbon Steel	1	60-80	20000	N ₂ / Air	10	3.0 Single	0	0.5	1
	2	40-50			10	3.0 Single	0	0.5	
	3	35-45			10	3.0 Single	0	0.5	
	4	30-35			12	3.5 Single	0	0.5	
	5	25-30			10	3.5 Single	0	0.5	
	6	20-25			12	3.5 Single	-0.5	0.5	
	8	14-18			13	4.5 Single	-1	0.5	
	10	10-13			13	4.5 Single	-1.5	0.5	
	12	7-8			14	4.5 Single	-2	0.5	
	14	5.5-6.5			16	4.5 Single	-3	0.5	
	16	4.0-4.5			25	5.0 Single	-4	0.5	
	18	3.2-3.5			25	5.0 Single	-6	0.5	
	20	2.7-3.0			25	6.0 Single	-10	0.5	
	10	2.2-2.5	6000	O ₂	0.6	1.2 Double	+8	0.6	2
	12	1.9-2.1	6500		0.6	1.2 Double	+9	0.6	
	14	1.8-1.9	8000		0.6	1.4 Double	+10	0.6	
	16	1.6-1.8	8500		0.6	1.4 Double	+11	0.6	
	18	1.5-1.7	12000		0.6	1.6	+12	0.6	

	40	0.6-0.8			1.0	1.6 Single	+14	0.3	
	50	0.3-0.5			1.3	1.8 Single	+14	1.5	
	60	0.1-0.2			1.6	1.8 Single	+14	1.5	
	70	0.1-0.2			1.6	1.8 Single	+14	1.5	
	80	0.1-0.2			1.6	1.8 Single	+14	1.5	
Stainless steel	1	60-80	20000	N 2	10	3.0 Single	0	0.5	
	2	40-45			10	3.0 Single	0	0.5	
	3	35-40			10	3.0 Single	0	0.5	
	4	30-33			12	3.5 Single	0	0.5	
	5	23-25			12	3.5 Single	0	0.5	
	6	20-22			13	4.5 Single	-1	0.5	
	8	15-18			13	4.5 Single	-3	0.5	
	10	11-13			14	4.5 Single	-3	0.3	
	12	8-10			14	4.5 Single	-4	0.5	
	14	5.5-6.5			14	4.5 Single	-6	0.5	
	16	4.5-5.5			16	5.0 Single	-8	0.5	
	18	3.5-4.5			18	5.0 Single	-8	0.5	
	20	3.0-4.0			20	5.0 Single	-9	0.5	
	25	1.9-2.4			25	6.0 Single	-13	0.5	
	30	0.8-1.2			25	6.0 Single	-15	0.5	
	35	0.5-0.8			25	7.0 Single	-17	0.5	
	40	0.3-0.5			25	5.0 Single	+8	0.3	
	50	0.1-0.2			25	5.0 Single	+9	0.3	
	60	0.1-0.2			25	6.0 Single	+9	0.3	

	70	0.1-0.15			25	8.0 Single	+9	0.3	
	80	0.1-0.15			25	8.0 Single	+9	0.3	
	90	0.05-0.1			25	8.0 Single	+9	0.3	
	100	0.05-0.1			25	8.0 Single	+9	0.3	
Stainless Steel	1	60-80	20000	Air	8	2.0 Single	0	0.5	
	2	50-60			8	2.0 Single	0	0.5	
	3	40-45			10	3.0 Single	-1	0.5	
	4	35-39			10	3.0 Single	-1	0.5	
	5	25-30			11	3.5 Single	-1	0.5	
	6	22-26			11	3.5 Single	-2	0.5	
	8	15-18			12	4.0 Single	-2	0.5	
	10	12-14			13	4.0 Single	-3	0.3	
	12	10-11			13	4.5 Single	-3.5	0.3	
	14	6.5-7.5			14	4.5 Single	-3.5	0.3	
	16	5.0-5.8			16	4.5 Single	-7	0.3	
	18	3.8-4.5			20	4.5 Single	-9	0.3	
	20	3.0-3.5			20	5.0 Single	-10	0.3	
	25	1.5-2.0			25	5.0 Single	-13	0.3	
	30	1.0-1.3			35	5.0 Single	-15	0.3	
	40	0.5-0.6			25	6.0 Single	-17	0.3	
	50	0.1-0.2			25	6.0 Single	+9	0.3	
	60	0.1-0.2			25	8.0 Single	+9	0.3	
	70	0.1-0.15			35	8.0 Single	+9	0.3	
	1	60-80			8	3.0 Single	0	0.5	

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Aluminum	2	45-55	20000	N 2	8	3.0 Single	0	0.5
	3	38-45			8	3.0 Single	-1	0.5
	4	30-40			8	3.0 Single	-1	0.5
	5	23-28			10	3.5 Single	-2	0.5
	6	18-25			10	4.5 Single	-2	0.5
	8	16-23			10	5.0 Single	-3	0.5
	10	10-13			10	5.0 Single	-3	0.5
	12	7.0-8.0			10	5.0 Single	-4	0.5
	14	4.0-6.0			12	5.0 Single	-5	0.5
	16	3.0-5.0			14	5.0 Single	-6	0.5
	18	2.3-2.8			14	5.0 Single	-6	0.5
	20	2.0-2.3			16	5.0 Single	-7	0.5
	25	1.0-1.5			18	6.0 Single	-8	0.5
	30	0.6-0.8			20	6.0 Single	-8	0.5
	40	0.3-0.4			25	6.0 Single	8	0.5
	50	0.3-0.4			28	6.0 Single	8	0.5
	60	0.2-0.3			28	6.0 Single	8	0.5
Brass	1	50-60	20000	N 2	10	3.0 Single	0	0.5
	2	35-45			10	3.5 Single	0	0.5
	3	30-35			10	3.5 Single	0	0.5
	4	25-30			10	3.5 Single	-1	0.5
	5	18-22			12	4.5 Single	-1	0.5
	6	13-17			12	4.5 Single	-1.5	0.5

	8	9.0-12			12	5.0 Single	-2	0.5	
	10	6.0-8.0			13	5.0 Single	-3	0.5	
	12	4.0-6.0			14	5.0 Single	-3	0.5	
	14	3.5-4.5			14	5.0 Single	-4	0.5	
	16	2.0-3.0			14	5.0 Single	-5	0.5	
	18	1.0-1.5			16	5.0 Single	-6	0.5	
	20	0.7-0.9			18	6.0 Single	-6.5	0.5	
Copper	1	35-40	20000	O2	8	3.0 Single	0	0.5	3
	2	26-30			8	3.0 Single	0	0.5	
	3	24-28			8	3.5 Single	0	0.5	
	4	16-20			10	3.5 Single	-1	0.5	
	5	12-15			10	5.0 Single	-1	0.5	
	6	8.0-10			10	5.0 Single	-2	0.5	
	8	5.0-6.0			10	5.0 Single	-3	0.5	
	10	3.0-3.5			12	5.0 Single	-4	0.5	
	12	2.0-2.5			14	5.0 Single	-5	0.5	

Note: When cutting Carbon Steel and Stainless Steel with air and nitrogen, the efficiency and stability will be improved, and the slag hanging phenomenon is also easy to occur with the increase of thickness. The above data parameters may change due to the influence of machine tool, system, cutting head, air pressure, materials and other factors during the actual batch cutting. The red label parameters in the table are sampling parameters, which are greatly affected by various factors in the actual processing, It is only suitable for small batch production. It is not recommended to use large batch production and processing. It is recommended to use higher power lasers. Copper needs to be cut with high-pressure oxygen, and air or nitrogen is easy to damage the laser.

12.2 Multi module MFMC-20000W fiber core 100μM Perforation reference

12.2.1 MAX MFMC-20000W 30mm Carbon Steel perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Pressure bar	Focus mm	Perforation Time ms	Stop Light Blowing ms
High Position	15000	45	150	20	0.6	-4	200	
Median	15000	45	100	12	0.6	-6	1000	
Low Position	20000	55	100	8	0.6	-8	200	

12.2.2 MAX MFMC-20000W 40mm Carbon Steel perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Pressure bar	Focus mm	Perforation Time ms	Stop Light Blowing ms
High Position	20000	45	100	20	0.6	-6	200	
Median	20000	45	150	12	0.7	-8	2500	
Low Position	15000	50	150	8	0.7	-12	500	

12.2.3 MAX MFMC-20000W 30mm Stainless Steel nitrogen perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Pressure bar	Focus mm	Perforation Time ms	Stop Light Blowing ms
High Position	20000	55	2500	20	6	-8	200	
Median	20000	45	2500	15	8	-12	1500	
Low Position	20000	45	80	10	8	-16	500	

12.2.4 MAX MFMC-20000W 30mm Stainless Steel oxygen perforation parameters (for reference only)

Stage	Power W	Cut Power %	Frequency Hz	Nozzle Height mm	Pressure bar	Focus mm	Perforation Time ms	Stop Light Blowing ms
High Position	20000	45	100	20	0.6	-6	200	
Median	20000	45	100	12	0.8	-8	2000	
Low Position	12000	55	100	10	0.8	-12	500	

The perforation parameters take the extreme thickness of Carbon Steel/Stainless Steel that can be penetrated under the current power as an example. The perforation parameters can be adjusted in a wide range, and the parameters such as Cut Power and frequency can be adjusted according to the actual effect to achieve the best effect; The perforations are sorted in order, and the High Position is the first level of perforations, and so on.