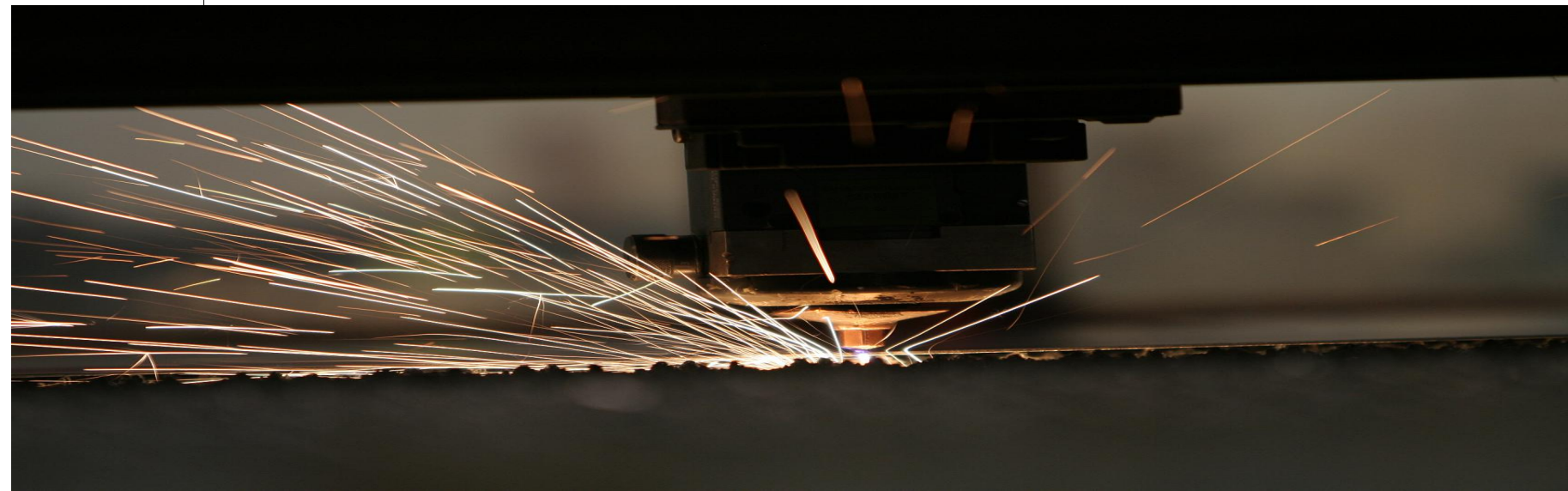


# TengWen Laser Catalog



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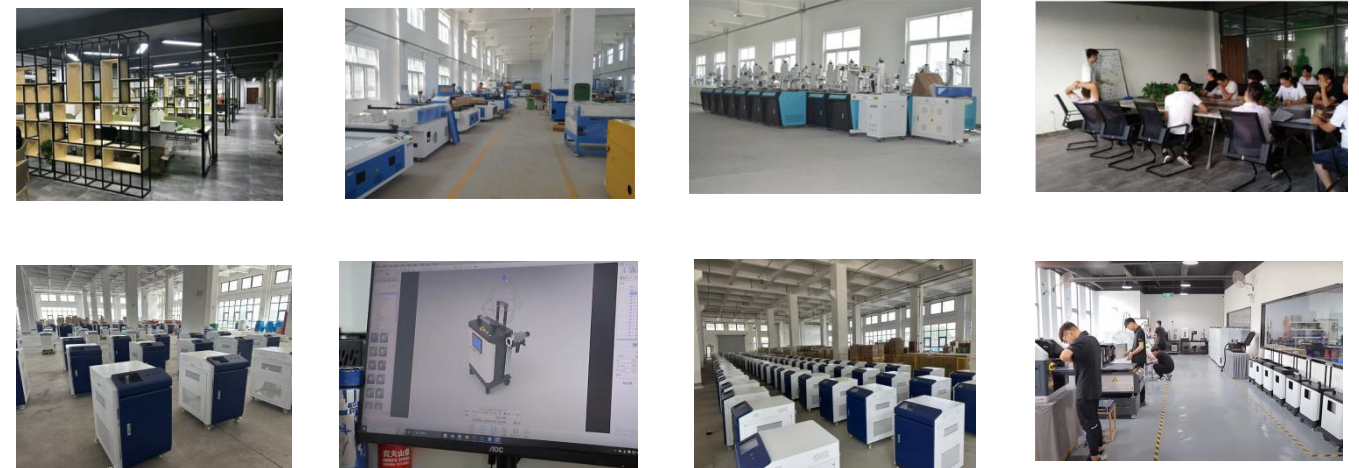
Since 2013

[www.tengwenlaser.com](http://www.tengwenlaser.com)



TENGWEN LASER is a professional laser machine manufacturer with over 10 years of experience in designing and manufacturing laser machines. The main products that we are manufacturing and selling are laser cleaning machines, laser welding machines, laser marking machines, laser cutting machines, and CNC Router. Since TENGWEN LASER was established, our products have been exported to more than 100 countries and are highly recommended and trusted by customers globally.

TENGWEN LASER's company culture is "Result-oriented. Live for quality". We pursue excellent product quality, pay attention to every detail of the machine's part, and devote ourselves to providing customers with superior quality and reliable prices.

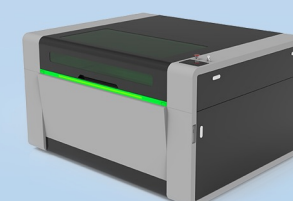
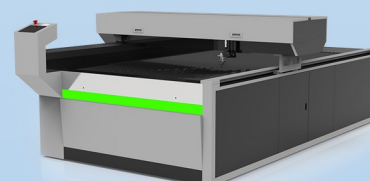
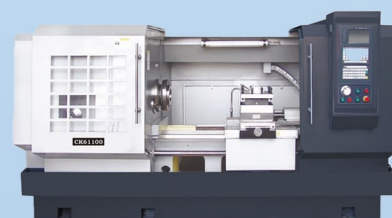
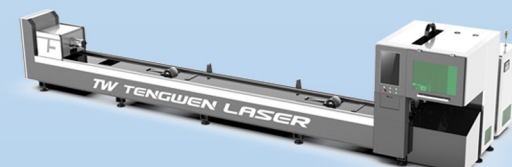
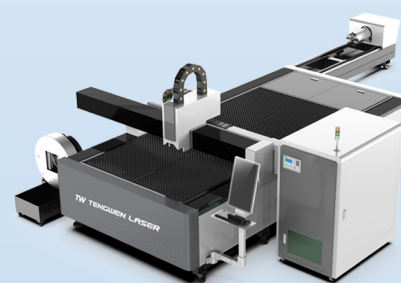
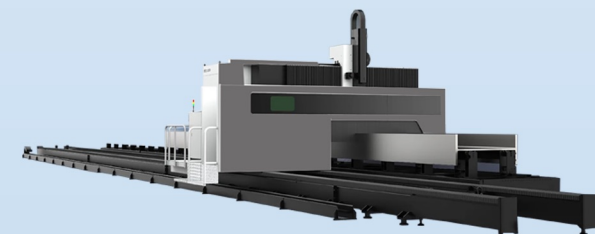
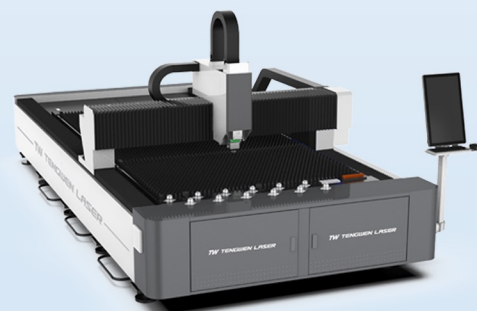
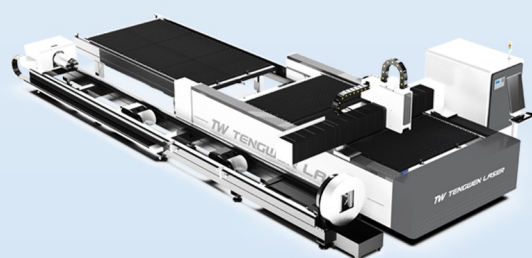
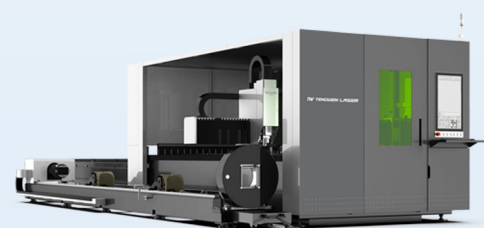


Adhere to independent innovative design, independent research and development; factory independent production, strict quality control; perfect after-sales technical team, global door-to-door technical service





# Product Overview

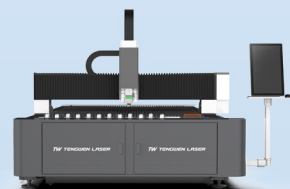
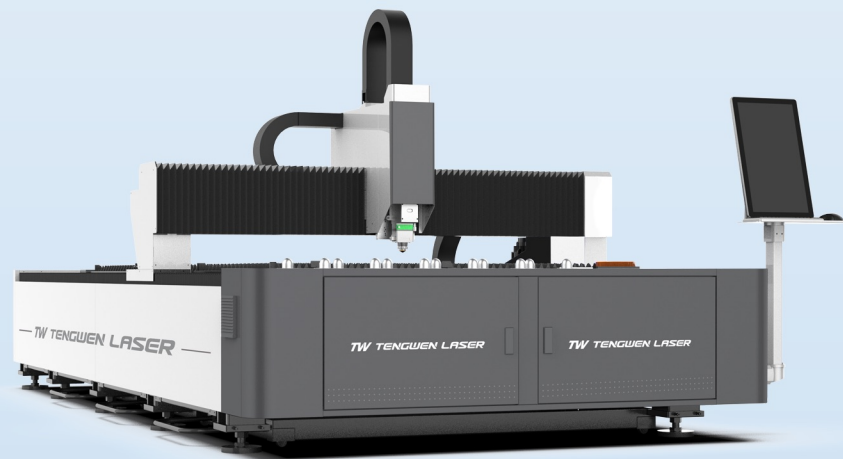


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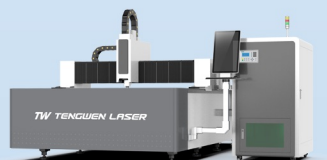
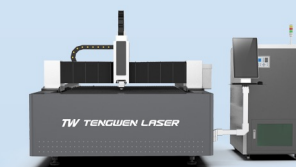
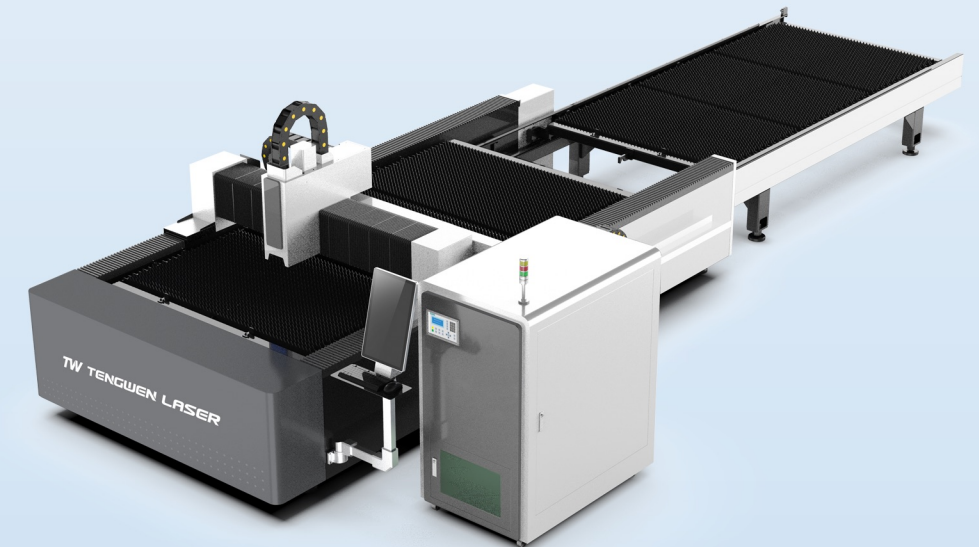


## F-Fiber Laser Cutting Machine



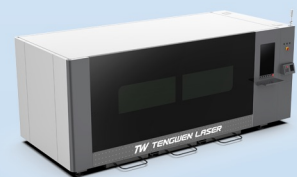
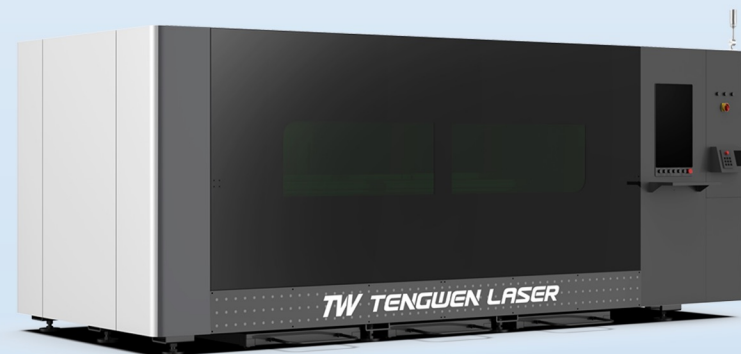
| Model                         | F3015       | F4015       | F6015       | F4020       | F6020       | F6025       | F8020       | F8025       |
|-------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Working Area                  | 3050*1530mm | 4050*1530mm | 6050*1530mm | 4050*2030mm | 6050*2030mm | 6050*2530mm | 8050*2030mm | 8050*2530mm |
| Laser Power                   | 1.5-60kw    |             |             |             |             |             |             |             |
| Accuracy Of Positioning       | ± 0.03mm    |             |             |             |             |             |             |             |
| Repeat Repositioning Accuracy | ± 0.02mm    |             |             |             |             |             |             |             |
| Max Movement Speed            | 100m/min    |             |             | 120m/min    |             |             |             |             |
| Maximum Acceleration          | 1.5G        |             |             |             |             |             |             |             |

## E-Exchange Table Fiber Laser Cutting Machine



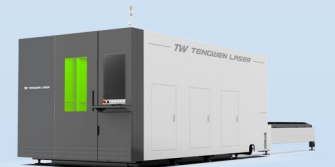
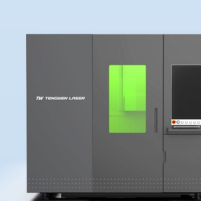
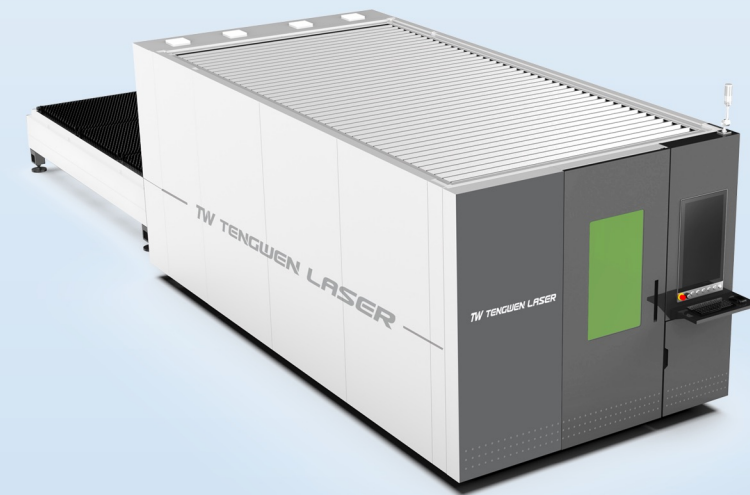
| Model                         | E3015       | E4015       | E6015       | E4020       | E6020       | E6025       | E8020       | E8025       |
|-------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Working Area                  | 3050*1530mm | 4050*1530mm | 6050*1530mm | 4050*2030mm | 6050*2030mm | 6050*2530mm | 8050*2030mm | 8050*2530mm |
| Laser Power                   | 1.5-60kw    |             |             |             |             |             |             |             |
| Accuracy Of Positioning       | ± 0.03mm    |             |             |             |             |             |             |             |
| Repeat Repositioning Accuracy | ± 0.02mm    |             |             |             |             |             |             |             |
| Max Movement Speed            | 100m/min    |             |             | 120m/min    |             |             |             |             |
| Maximum Acceleration          | 1.5G        |             |             |             |             |             |             |             |

## S-Protective Single Table Fiber Laser Cutting Machine



| Model                | S6060     | S6090     | S1390      | S1313       | S1510       |
|----------------------|-----------|-----------|------------|-------------|-------------|
| Working Area         | 650*650mm | 650*930mm | 1350*930mm | 1350*1350mm | 1550*1030mm |
| Laser Power          | 1-3kw     |           |            |             |             |
| Repeatability        | ± 5 μ m   |           | ± 0.02mm   |             |             |
| Positioning Accuracy | ± 20 μ m  |           | ± 0.03mm   |             |             |
| Max Movement Speed   | 100m/min  |           |            |             |             |
| Maximum Acceleration | 1.5G      |           |            |             |             |

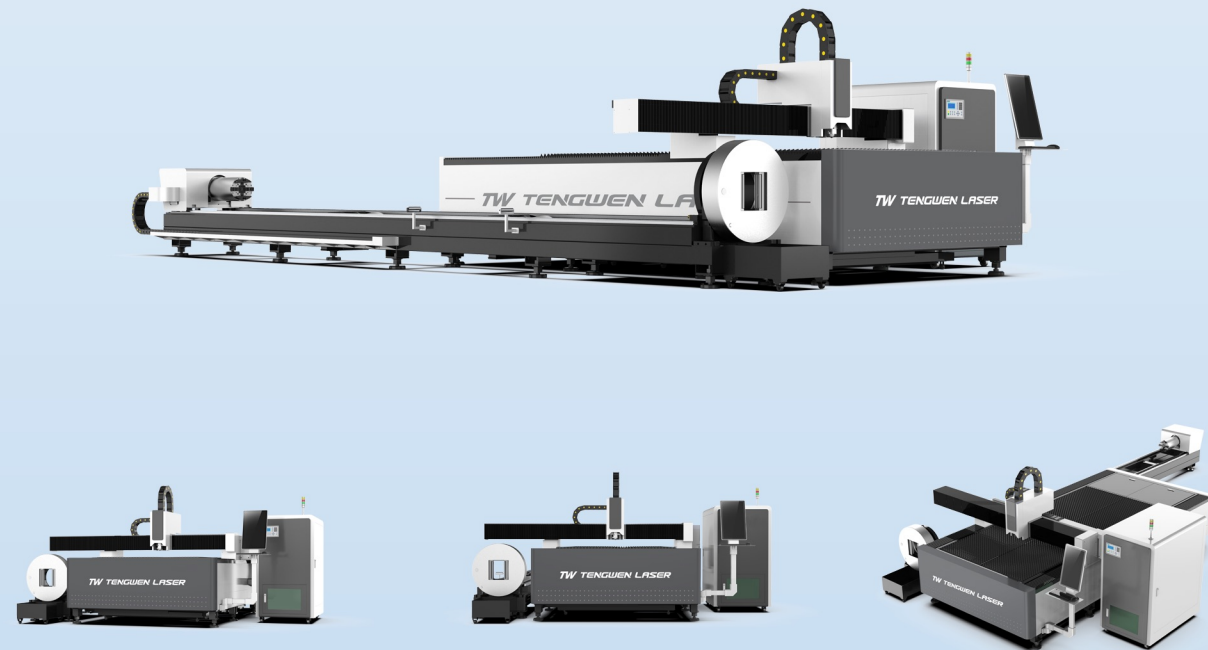
## P-Protective Exchange Table Fiber Laser Cutting Machine



| Model                         | P3015       | P4015       | P6015       | P4020       | P6020       | P6025       | P8020       | P8025       |
|-------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Working Area                  | 3050*1530mm | 4050*1530mm | 6050*1530mm | 4050*2030mm | 6050*2030mm | 6050*2530mm | 8050*2030mm | 8050*2530mm |
| Laser Power                   | 1.5-60kw    |             |             |             |             |             |             |             |
| Accuracy Of Positioning       | ± 0.03mm    |             |             |             |             |             |             |             |
| Repeat Repositioning Accuracy | ± 0.02mm    |             |             |             |             |             |             |             |
| Max Movement Speed            | 120m/min    |             |             |             |             |             |             |             |
| Maximum Acceleration          | 1.5G        |             |             |             |             |             |             |             |

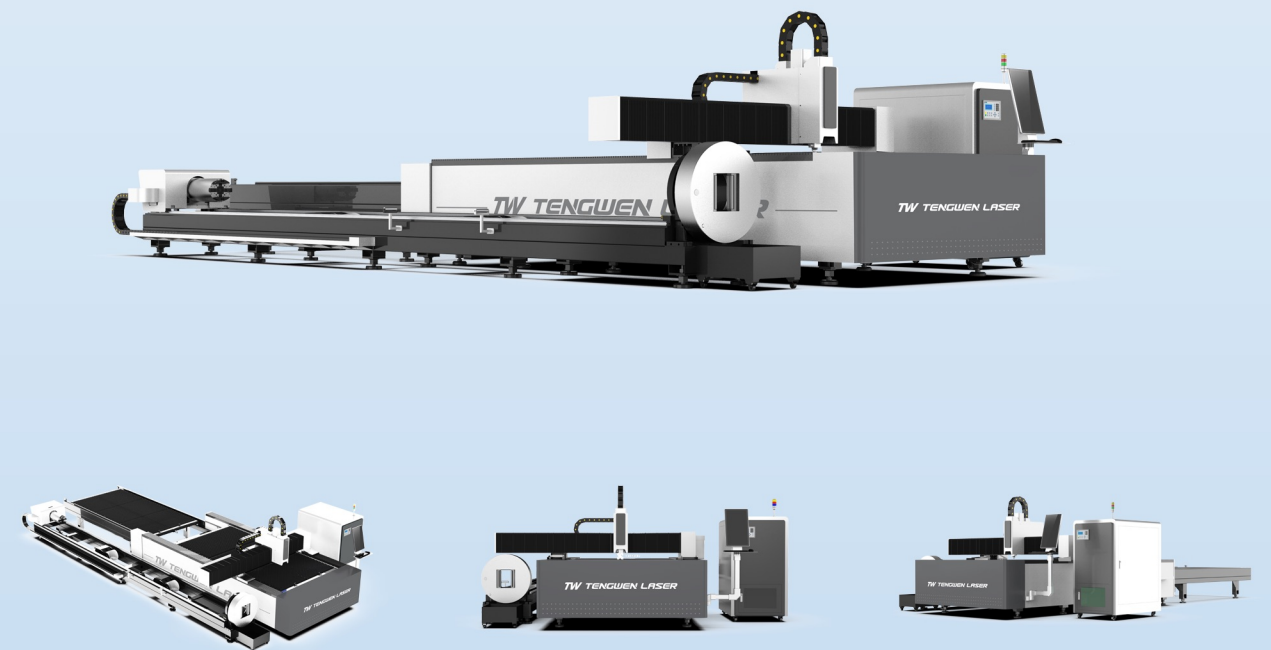


## FT-Single Table Plate and Tube Fiber Laser Cutting Machine



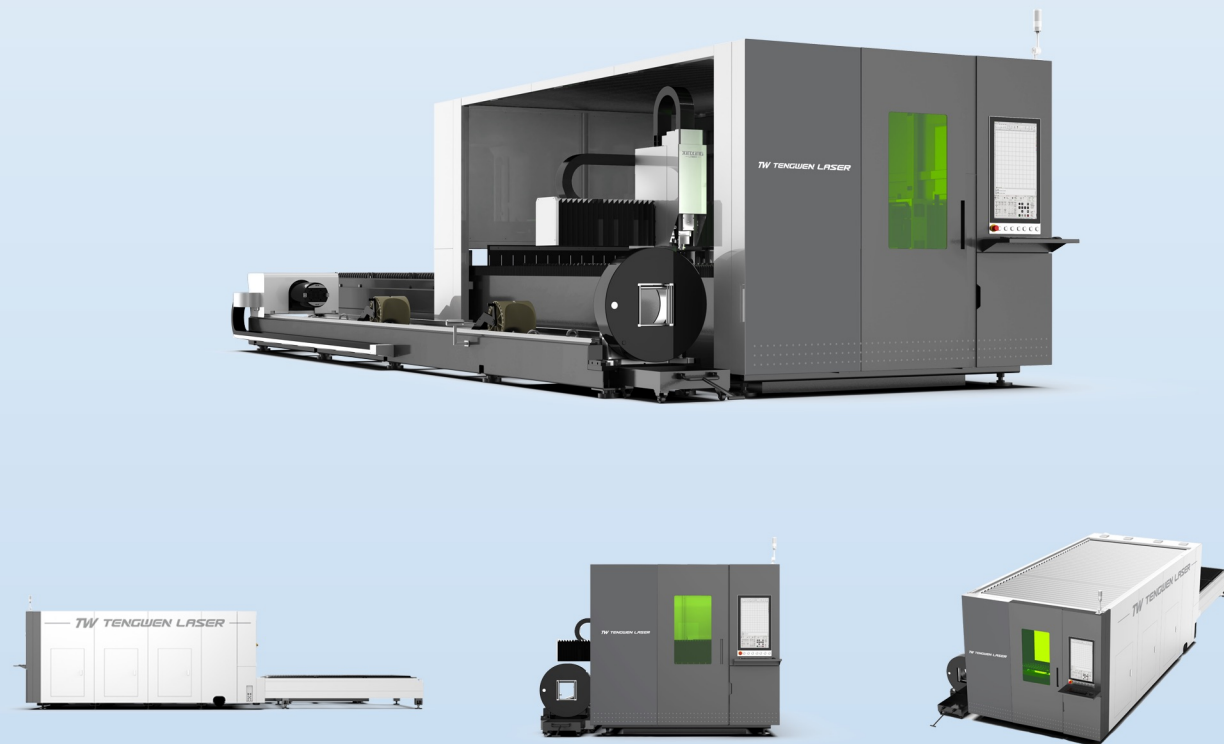
| Model                         | FT3015                             | FT4015      | FT6015      | FT4020      | FT6020      | FT6025      | FT8020      | FT8025      |
|-------------------------------|------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Plate Working Area            | 3050*1530mm                        | 4050*1530mm | 6050*1530mm | 4050*2030mm | 6050*2030mm | 6050*2530mm | 8050*2030mm | 8050*2530mm |
| Tube Working Area             | 6/9/12m, φ 10- φ 225mm,□10- □225mm |             |             |             |             |             |             |             |
| Laser Power                   | 1.5-6kw                            |             |             |             |             |             |             |             |
| Accuracy Of Positioning       | ± 0.03mm                           |             |             |             |             |             |             |             |
| Repeat Repositioning Accuracy | ± 0.02mm                           |             |             |             |             |             |             |             |
| Max Movement Speed            | 100m/min                           |             |             | 120m/min    |             |             |             |             |
| Maximum Acceleration          | 1.5G                               |             |             |             |             |             |             |             |

## ET-Exchange Table Plate and Tube Fiber Laser Cutting Machine



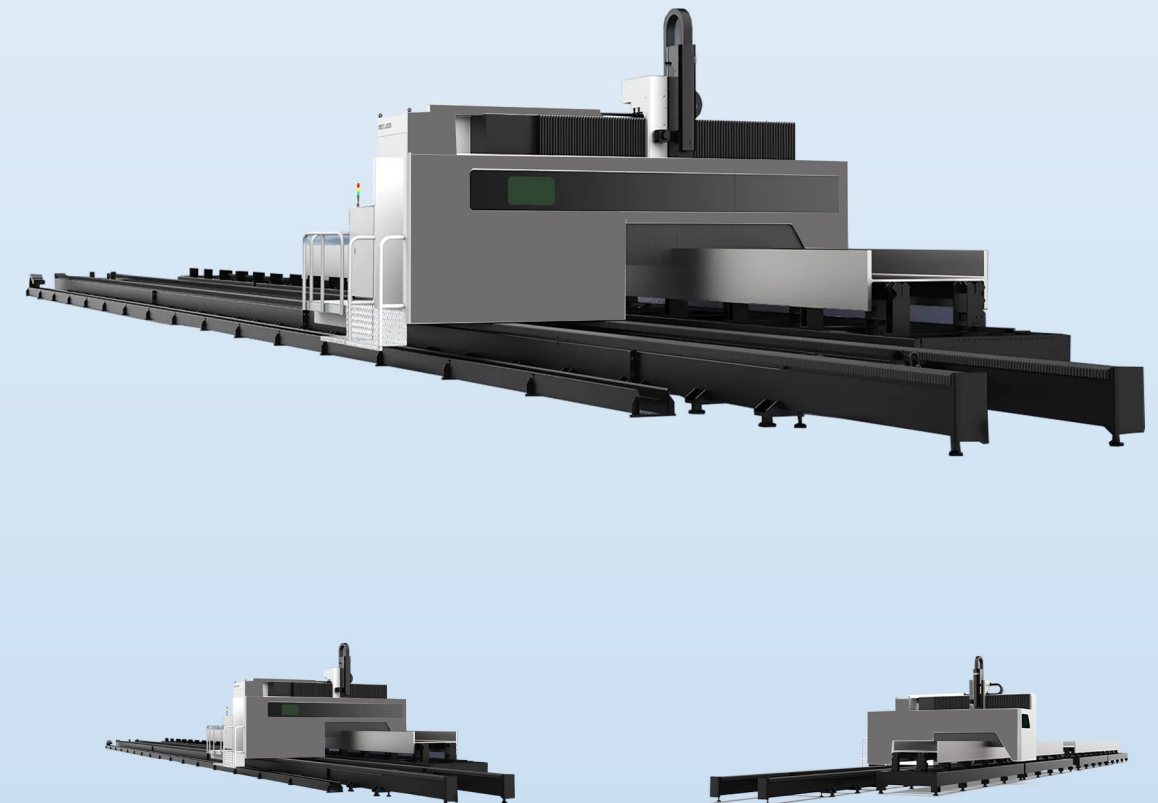
| Model                         | ET3015                             | ET4015      | ET6015      | ET4020      | ET6020      | ET6025      | ET8020      | ET8025      |
|-------------------------------|------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Plate Working Area            | 3050*1530mm                        | 4050*1530mm | 6050*1530mm | 4050*2030mm | 6050*2030mm | 6050*2530mm | 8050*2030mm | 8050*2530mm |
| Tube Working Area             | 6/9/12m, φ 10- φ 225mm,□10- □225mm |             |             |             |             |             |             |             |
| Laser Power                   | 1.5-6kw                            |             |             |             |             |             |             |             |
| Accuracy Of Positioning       | ± 0.03mm                           |             |             |             |             |             |             |             |
| Repeat Repositioning Accuracy | ± 0.02mm                           |             |             |             |             |             |             |             |
| Max Movement Speed            | 100m/min                           |             |             | 120m/min    |             |             |             |             |
| Maximum Acceleration          | 1.5G                               |             |             |             |             |             |             |             |

## PT-Protective Exchange Table Plate and Tube Fiber Laser Cutting Machine



| Model                         | PT3015                             | PT4015      | PT6015      | PT4020      | PT6020      | PT6025      | PT8020      | PT8025      |
|-------------------------------|------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Plate Working Area            | 3050*1530mm                        | 4050*1530mm | 6050*1530mm | 4050*2030mm | 6050*2030mm | 6050*2530mm | 8050*2030mm | 8050*2530mm |
| Tube Working Area             | 6/9/12m, φ 10- φ 225mm,□10- □225mm |             |             |             |             |             |             |             |
| Laser Power                   | 1.5-6kw                            |             |             |             |             |             |             |             |
| Accuracy Of Positioning       | ± 0.03mm                           |             |             |             |             |             |             |             |
| Repeat Repositioning Accuracy | ± 0.02mm                           |             |             |             |             |             |             |             |
| Max Movement Speed            | 100m/min                           |             |             | 120m/min    |             |             |             |             |
| Maximum Acceleration          | 1.5G                               |             |             |             |             |             |             |             |

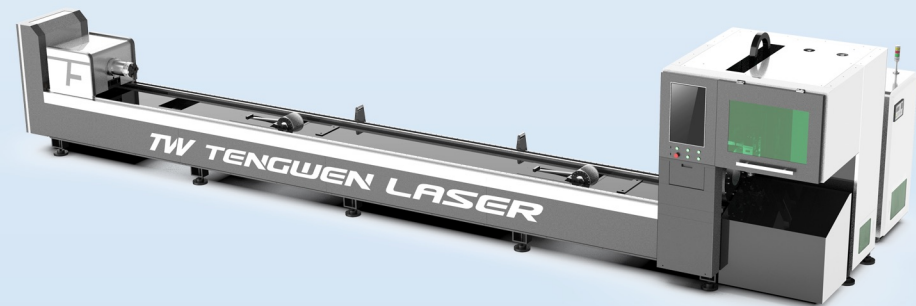
## G-Ground Orbit Fiber Laser Cutting Machine



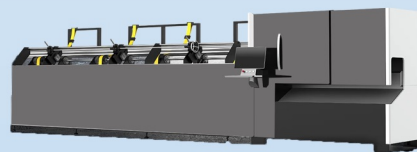
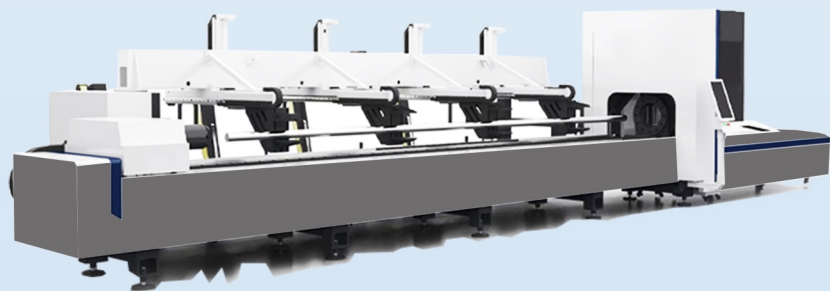
|                               |              |              |              |              |              |              |              |              |
|-------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Model                         | G12532       | G16532       | G20532       | G24532       | G12540       | G16540       | G20540       | G24540       |
| Working Area                  | 12550*3250mm | 16550*3250mm | 20550*3250mm | 24550*3250mm | 12550*4050mm | 16550*4050mm | 20550*4050mm | 24550*4050mm |
| Laser Power                   | 6-60kw       |              |              |              |              |              |              |              |
| Accuracy Of Positioning       | ± 0.01mm     |              |              |              |              |              |              |              |
| Repeat Repositioning Accuracy | ± 0.05mm     |              |              |              |              |              |              |              |
| Max Movement Speed            | 80m/min      |              |              |              |              |              |              |              |
| Maximum Acceleration          | 0.8G         |              |              |              |              |              |              |              |



T-Tube Fiber Laser Cutting Machine



TA-Autoloading Tube Fiber Laser Cutting Machine



| Model                                     | T6016           | T6023         | T6035         | T9023         | T9035         | T12035        | T12050        | T12060     |
|---|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|------------|
| Maximum cutting length                    | 6300mm          |               |               | 9300mm        |               | 12300mm       |               |            |
| Effective cutting diameter of round tube  | φ 10mm- φ 160mm | φ 15- φ 230mm | φ 15- φ 350mm | φ 15- φ 230mm | φ 15- φ 350mm | φ 15- φ 350mm | φ 15- φ 500mm | φ 20-590mm |
| Effective Cutting Diameter Of Square Tube | □10-□160mm      | □15-□230mm    | □15-□350mm    | □15-□230mm    | □15-□350mm    | □15-□350mm    | □15-□350mm    | □20-400mm  |
| Laser Power                               | 1-6kw           |               |               |               |               | 3-12kw        |               |            |
| Accuracy Of Positioning                   | ± 0.01mm        | ± 0.03mm      |               |               |               |               | ± 0.05mm      |            |
| Maximum Simultaneous Positioning Speed    | 120m/min        | 120m/min      | 80m/min       | 120m/min      | 80m/min       | 80m/min       | 60m/min       | 50m/min    |
| Y-axis maximum acceleration               | 1.5G            | 1.5G          | 0.8G          | 1.5G          | 0.8G          | 0.8G          | 0.6G          | 0.5G       |

| Model                                     | TA6016          | TA6023        | TA6035        | TA9023        | TA9035        | TA12035       | TA12050       | TA12060    |
|---|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|------------|
| Maximum cutting length                    | 6300mm          |               |               | 9300mm        |               | 12300mm       |               |            |
| Effective cutting diameter of round tube  | φ 10mm- φ 160mm | φ 15- φ 230mm | φ 15- φ 350mm | φ 15- φ 230mm | φ 15- φ 350mm | φ 15- φ 350mm | φ 15- φ 500mm | φ 20-590mm |
| Effective Cutting Diameter Of Square Tube | □10-□160mm      | □15-□230mm    | □15-□350mm    | □15-□230mm    | □15-□350mm    | □15-□350mm    | □15-□350mm    | □20-400mm  |
| Laser Power                               | 1-6kw           |               |               |               |               | 3-12kw        |               |            |
| Accuracy Of Positioning                   | ± 0.01mm        | ± 0.03mm      |               |               |               |               | ± 0.05mm      |            |
| Maximum Simultaneous Positioning Speed    | 150m/min        | 120m/min      | 80m/min       | 120m/min      | 80m/min       | 80m/min       | 60m/min       | 50m/min    |
| Y-axis maximum acceleration               | 1.5G            | 1.5G          | 0.8G          | 1.5G          | 0.8G          | 0.8G          | 0.6G          | 0.5G       |

WW-Water Cooling Fiber Laser Welding Machine



| Model                                   | WW-1000               | WW-1500 | WW-2000 | WW-3000        |
|---|-----------------------|---------|---------|----------------|
| Laser Power                             | 1000W                 | 1500W   | 2000W   | 3000W          |
| Laser Wavelength                        | 1064±10nm             |         |         |                |
| Machine Power                           | ≤5.5KW                | ≤7.5KW  | ≤9.5KW  | ≤13.5KW        |
| Operating Environment temperature range | 10-40°C               |         |         |                |
| Working Environment humidity range      | < 70% No condensation |         |         |                |
| Welding Line Requirements               | ≤0.5mm                |         |         |                |
| Max Welding Speed                       | 0-120mm/s             |         |         |                |
| Machine Size                            | 1000×630×910mm        |         |         | 1200×630×960mm |

AW-Air Cooling Fiber Laser Welding Machine



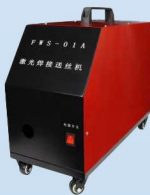
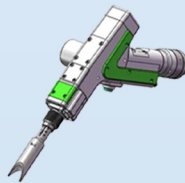
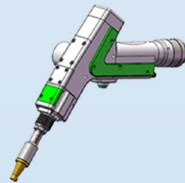
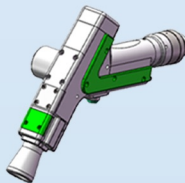
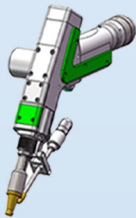
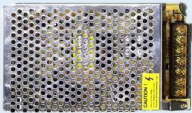
| Model   | AW-80                           | AW-120              | AW-150              |
|---|---------------------------------|---------------------|---------------------|
| Limit output power (W)(At the current of 19A) | 700                             | 1000                | 1300                |
| Max.output power (W)(the current is 225A)     | 800                             | 1200                | 1500                |
| Operating Mode                                | 24h continuous working          |                     |                     |
| Power Range(%)                                | 10~100                          | 10~100              | 10~100              |
| Central Wavelength(nm)                        | 1080 ± 3                        | 1080 ± 3            | 1080 ± 3            |
| Max.Modulation Frequency (kHz)                | 20                              |                     |                     |
| Delivery Fiber Length (m)                     | Standard 5m or 10m customizable |                     |                     |
| Control Model                                 | Ext.AD/LOC.AD                   |                     |                     |
| Ambient Humidity(%)                           | <90                             |                     |                     |
| Ambient Temperature (C)                       | -60                             |                     |                     |
| Cooling Method                                | Air cooling                     |                     |                     |
| Size W*H*D (mm³)                              | 273 × 614.9 × 396.3             | 273 × 634.9 × 527.7 | 273 × 634.9 × 527.7 |
| Weight (kg)                                   | <34                             | <40                 | <43                 |



SW-Small Fiber Laser Welding Machine

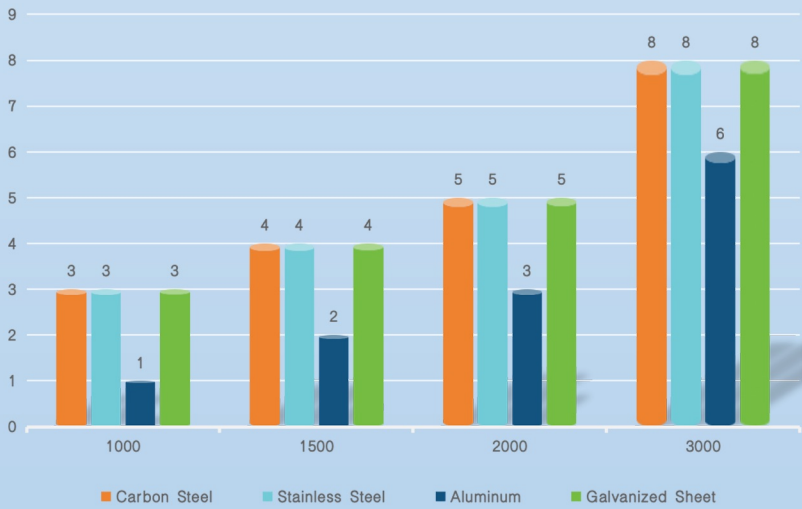


4-in-1 Welding System



| MODEL                                 | SW1000                  | SW1500 | SW2000 | SW3000 |
|---------------------------------------|-------------------------|--------|--------|--------|
| Laser source                          | Raycus / MAX / BWT      |        |        |        |
| Laser power                           | 1000W                   | 1500W  | 2000W  | 3000W  |
| Laser wavelength                      | 1080nm                  |        |        |        |
| Operating Mode                        | Continuous Welding      |        |        |        |
| Speed range                           | 0-120mm/s               |        |        |        |
| Operating System                      | Handheld Welding System |        |        |        |
| Working environment temperature range | 10-40°C                 |        |        |        |
| Humidity range Operating environment  | < 70% non-condensing    |        |        |        |
| Welding gap requirements              | ≤0.8mm                  |        |        |        |
| Welder Dimensions                     | 970*595*825mm           |        |        |        |
| Machine Weight                        | 125kg                   | 125kg  | 134kg  | 155kg  |

TengWen Laser Cutting Ability



Welding Parameter

| 一. stainless steel          |                |                      |                |                      |                  |                          |                    |                |                |
|-----------------------------|----------------|----------------------|----------------|----------------------|------------------|--------------------------|--------------------|----------------|----------------|
| Material and thickness (mm) | laser power(W) | Laser Frequency (HZ) | Duty cycle (%) | Swing frequency (HZ) | Swing length(mm) | wire feeding speed(mm/s) | Welding wire model | welding angle  | form           |
| stainless steel1.0          | 500            | 3000                 | 100            | 35                   | 2                | 12                       | ER304. 0. 8        | plane          | penetration    |
| stainless steel1.0          | 450            | 3000                 | 100            | 35                   | 2                | 12                       | ER304. 0. 8        | interior angle | white          |
| stainless steel1.0          | 500            | 3000                 | 100            | 35                   | 2                | 12                       | ER304. 0. 8        | External angle | 75%penetration |
| stainless steel1.5          | 550            | 3000                 | 100            | 35                   | 2                | 12                       | ER304. 0. 8        | plane          | penetration    |
| stainless steel1.5          | 500            | 3000                 | 100            | 35                   | 2                | 12                       | ER304. 0. 8        | interior angle | white          |
| stainless steel1.5          | 550            | 3000                 | 100            | 35                   | 2                | 12                       | ER304. 0. 8        | External angle | 80%penetration |
| stainless steel2.0          | 1000           | 3000                 | 100            | 35                   | 2. 5             | 12                       | ER304. 1. 0        | plane          | penetration    |
| stainless steel2.0          | 800            | 3000                 | 100            | 35                   | 2. 5             | 12                       | ER304. 1. 0        | interior angle | white          |
| stainless steel2.0          | 1000           | 3000                 | 100            | 35                   | 2. 5             | 12                       | ER304. 1. 0        | External angle | 70%penetration |
| stainless steel2.5          | 1200           | 3000                 | 100            | 35                   | 2. 5             | 12                       | ER304. 1. 0        | plane          | penetration    |
| stainless steel2.5          | 1000           | 3000                 | 100            | 35                   | 2. 5             | 12                       | ER304. 1. 0        | interior angle | white          |
| stainless steel2.5          | 1200           | 3000                 | 100            | 35                   | 2. 5             | 12                       | ER304. 1. 0        | External angle | 80%penetration |
| stainless steel3.0          | 1600           | 3000                 | 100            | 35                   | 3                | 12                       | ER304. 1. 2        | plane          | penetration    |
| stainless steel3.0          | 1350           | 3000                 | 100            | 35                   | 3                | 12                       | ER304. 1. 2        | interior angle | white          |
| stainless steel3.0          | 1400           | 3000                 | 100            | 35                   | 3                | 12                       | ER304. 1. 2        | External angle | 85%penetration |
| stainless steel3.5          | 1800           | 3000                 | 100            | 30                   | 3                | 12                       | ER304. 1. 2        | plane          | penetration    |
| stainless steel3.5          | 1500           | 3000                 | 100            | 30                   | 3                | 12                       | ER304. 1. 2        | interior angle | white          |
| stainless steel3.5          | 1600           | 3000                 | 100            | 30                   | 3                | 12                       | ER304. 1. 2        | External angle | 85%penetration |
| stainless steel4.0          | 2700           | 3000                 | 100            | 20                   | 3. 5             | 12                       | ER304. 1. 6        | plane          | penetration    |
| stainless steel4.0          | 2000           | 3000                 | 100            | 20                   | 3. 5             | 12                       | ER304. 1. 6        | interior angle | color          |
| stainless steel4.0          | 2500           | 3000                 | 100            | 20                   | 3. 5             | 12                       | ER304. 1. 6        | External angle | 90%penetration |
| stainless steel5.0          | 3000           | 3000                 | 100            | 15                   | 4. 0             | 12                       | ER304. 1. 6        | plane          | penetration    |
| stainless steel5.0          | 2200           | 3000                 | 100            | 15                   | 4. 0             | 12                       | ER304. 1. 6        | interior angle | color          |
| stainless steel5.0          | 2500           | 3000                 | 100            | 15                   | 4. 0             | 12                       | ER304. 1. 6        | External angle | 85%penetration |
| stainless steel6.0          | 2600           | 3000                 | 100            | 15                   | 5                | 6                        | 1. 6               |                |                |
| stainless steel7.0          | 2800           | 3000                 | 100            | 15                   | 5                | 6                        | 1. 6               |                |                |
| stainless steel8.0          | 2950           | 3000                 | 100            | 15                   | 5                | 5                        | 1. 6               |                |                |
| 二. carbon steel             |                |                      |                |                      |                  |                          |                    |                |                |
| Material and thickness (mm) | laser power(W) | Laser Frequency (HZ) | Duty cycle (%) | Swing frequency (HZ) | Swing length(mm) | wire feeding speed(mm/s) | Welding wire model | welding angle  | form           |
| carbon steel1.0             | 500            | 3000                 | 100            | 35                   | 2                | 12                       | ER304. 0. 8        | plane          | penetration    |
| carbon steel1.0             | 450            | 3000                 | 100            | 35                   | 2                | 12                       | ER304. 0. 8        | interior angle | white          |
| carbon steel1.0             | 500            | 3000                 | 100            | 35                   | 2                | 12                       | ER304. 0. 8        | External angle | 70%penetration |
| carbon steel1.5             | 550            | 3000                 | 100            | 35                   | 2                | 12                       | ER304. 0. 8        | plane          | penetration    |
| carbon steel1.5             | 500            | 3000                 | 100            | 35                   | 2                | 12                       | ER304. 0. 8        | interior angle | white          |
| carbon steel1.5             | 550            | 3000                 | 100            | 35                   | 2                | 12                       | ER304. 0. 8        | External angle | 85%penetration |
| carbon steel2.0             | 700            | 3000                 | 100            | 35                   | 2. 5             | 12                       | ER304. 1. 0        | plane          | penetration    |
| carbon steel2.0             | 600            | 3000                 | 100            | 35                   | 2. 5             | 12                       | ER304. 1. 0        | interior angle | white          |
| carbon steel2.0             | 700            | 3000                 | 100            | 35                   | 2. 5             | 12                       | ER304. 1. 0        | External angle | 80%penetration |
| carbon steel2.5             | 850            | 3000                 | 100            | 35                   | 2. 5             | 12                       | ER304. 1. 0        | plane          | penetration    |
| carbon steel2.5             | 750            | 3000                 | 100            | 35                   | 2. 5             | 12                       | ER304. 1. 0        | interior angle | white          |
| carbon steel2.5             | 750            | 3000                 | 100            | 35                   | 2. 5             | 12                       | ER304. 1. 0        | External angle | 85penetration  |
| carbon steel3.0             | 1300           | 3000                 | 100            | 35                   | 3. 0             | 12                       | ER304. 1. 2        | plane          | penetration    |
| carbon steel3.0             | 1100           | 3000                 | 100            | 35                   | 3. 0             | 12                       | ER304. 1. 2        | interior angle | white          |
| carbon steel3.0             | 1300           | 3000                 | 100            | 35                   | 3. 0             | 12                       | ER304. 1. 2        | External angle | 75%penetration |
| carbon steel3.5             | 1650           | 3000                 | 100            | 30                   | 3. 0             | 12                       | ER304. 1. 2        | plane          | penetration    |
| carbon steel3.5             | 1200           | 3000                 | 100            | 30                   | 3. 0             | 12                       | ER304. 1. 2        | interior angle | white          |

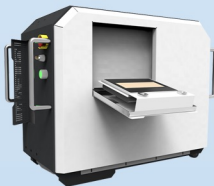
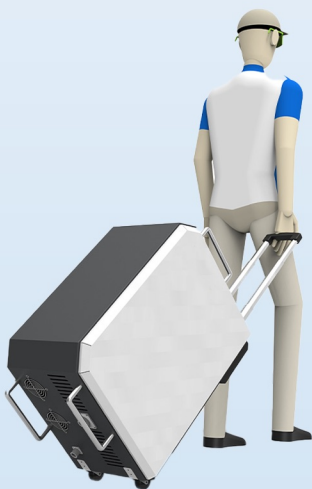
| carbon steel3.5             | 1200           | 3000                 | 100            | 30                   | 3. 0             | 12                       | ER304. 1. 2        | interior angle | white                |
|-----------------------------|----------------|----------------------|----------------|----------------------|------------------|--------------------------|--------------------|----------------|----------------------|
| carbon steel3.5             | 1500           | 3000                 | 100            | 30                   | 3. 0             | 12                       | ER304. 1. 2        | External angle | 85%penetration       |
| carbon steel4.0             | 2400           | 3000                 | 100            | 20                   | 3. 5             | 12                       | ER304. 1. 6        | plane          | penetration          |
| carbon steel4.0             | 1800           | 3000                 | 100            | 20                   | 3. 5             | 12                       | ER304. 1. 6        | interior angle | yellowish            |
| carbon steel4.0             | 2000           | 3000                 | 100            | 20                   | 3. 5             | 12                       | ER304. 1. 6        | External angle | 85%penetration       |
| carbon steel5.0             | 2700           | 3000                 | 100            | 15                   | 4. 0             | 12                       | ER304. 1. 6        | plane          | penetration          |
| carbon steel5.0             | 2100           | 3000                 | 100            | 15                   | 4. 0             | 12                       | ER304. 1. 6        | interior angle | color                |
| carbon steel5.0             | 2300           | 3000                 | 100            | 15                   | 4. 0             | 12                       | ER304. 1. 6        | External angle | 80%penetration       |
| carbon steel6.0             | 2600           | 3000                 | 100            | 15                   | 5                | 7                        | 1. 6               |                |                      |
| carbon steel7.0             | 2800           | 3000                 | 100            | 15                   | 5                | 5                        | 1. 6               |                |                      |
| carbon steel8.0             | 2950           | 3000                 | 100            | 15                   | 5                | 4                        | 1. 6               |                |                      |
| 三.Galvanized sheet          |                |                      |                |                      |                  |                          |                    |                |                      |
| Material and thickness (mm) | laser power(W) | Laser Frequency (HZ) | Duty cycle (%) | Swing frequency (HZ) | Swing length(mm) | wire feeding speed(mm/s) | Welding wire model | welding angle  | form                 |
| Galvanized sheet1.0         | 540            | 3000                 | 100            | 20                   | 2                | 12                       | ER304. 0. 8        | plane          | penetration          |
| Galvanized sheet1.0         | 540            | 3000                 | 100            | 20                   | 2                | 12                       | ER304. 0. 8        | interior angle | white                |
| Galvanized sheet1.0         | 540            | 3000                 | 100            | 20                   | 2                | 12                       | ER304. 0. 8        | External angle | 70%penetration       |
| Galvanized sheet1.5         | 690            | 3000                 | 100            | 20                   | 2                | 12                       | ER304. 0. 8        | plane          | penetration          |
| Galvanized sheet1.5         | 660            | 3000                 | 100            | 20                   | 2                | 12                       | ER304. 0. 8        | interior angle | white                |
| Galvanized sheet1.5         | 690            | 3000                 | 100            | 20                   | 2                | 12                       | ER304. 0. 8        | External angle | 75%penetration       |
| Galvanized sheet2.0         | 1200           | 3000                 | 100            | 20                   | 2. 5             | 12                       | ER304. 1. 0        | plane          | penetration          |
| Galvanized sheet2.0         | 1200           | 3000                 | 100            | 20                   | 2. 5             | 12                       | ER304. 1. 0        | interior angle | white                |
| Galvanized sheet2.0         | 1200           | 3000                 | 100            | 20                   | 2. 5             | 12                       | ER304. 1. 0        | External angle | 85%penetration       |
| Galvanized sheet2.5         | 1500           | 3000                 | 100            | 20                   | 2. 5             | 12                       | ER304. 1. 0        | plane          | penetration          |
| Galvanized sheet2.5         | 1500           | 3000                 | 100            | 20                   | 2. 5             | 12                       | ER304. 1. 0        | interior angle | white                |
| Galvanized sheet2.5         | 1500           | 3000                 | 100            | 20                   | 2. 5             | 12                       | ER304. 1. 0        | plane          | 80%penetration       |
| Galvanized sheet3.0         | 1900           | 3000                 | 100            | 15                   | 3. 0             | 12                       | ER304. 1. 2        | plane          | penetration          |
| Galvanized sheet3.0         | 1700           | 3000                 | 100            | 15                   | 3. 0             | 12                       | ER304. 1. 2        | interior angle | white                |
| Galvanized sheet3.0         | 1900           | 3000                 | 100            | 15                   | 3. 0             | 12                       | ER304. 1. 2        | External angle | 85%penetration       |
| 四.aluminum alloy            |                |                      |                |                      |                  |                          |                    |                |                      |
| Material and thickness (mm) | laser power(W) | Laser Frequency (HZ) | Duty cycle (%) | Swing frequency (HZ) | Swing length(mm) | wire feeding speed(mm/s) | Welding wire model | welding angle  | form                 |
| aluminum alloy1.0           | 600            | 3000                 | 100            | 35                   | 2                | 15                       | ER5356. 0. 8       | plane          | Double sided molding |
| aluminum alloy1.0           | 500            | 3000                 | 100            | 35                   | 2                | 15                       | ER5356. 0. 8       | interior angle | white                |
| aluminum alloy1.0           | 550            | 3000                 | 100            | 35                   | 2                | 15                       | ER5356. 0. 8       | External angle | 75%penetration       |
| aluminum alloy1.5           | 750            | 3000                 | 100            | 35                   | 2. 5             | 15                       | ER5356. 0. 8       | plane          | Double sided molding |
| aluminum alloy1.5           | 650            | 3000                 | 100            | 35                   | 2. 5             | 15                       | ER5356. 0. 8       | interior angle | white                |
| aluminum alloy1.5           | 700            | 3000                 | 100            | 35                   | 2. 5             | 15                       | ER5356. 0. 8       | External angle | 75%penetration       |
| aluminum alloy2.0           | 1050           | 3000                 | 100            | 35                   | 2. 5             | 15                       | ER5356. 1. 0       | plane          | Double sided molding |
| aluminum alloy2.0           | 900            | 3000                 | 100            | 35                   | 2. 5             | 15                       | ER5356. 1. 0       | interior angle | white                |
| aluminum alloy2.0           | 950            | 3000                 | 100            | 35                   | 2. 5             | 15                       | ER5356. 1. 0       | External angle | 85%penetration       |
| aluminum alloy2.5           | 1260           | 3000                 | 100            | 35                   | 2. 5             | 15                       | ER5356. 1. 0       | plane          | Double sided molding |
| aluminum alloy2.5           | 1000           | 3000                 | 100            | 35                   | 2. 5             | 15                       | ER5356. 1. 0       | interior angle | white                |
| aluminum alloy2.5           | 1100           | 3000                 | 100            | 35                   | 2. 5             | 15                       | ER5356. 1. 0       | External angle | 80%penetration       |
| aluminum alloy3.0           | 1500           | 3000                 | 100            | 35                   | 3. 5             | 10                       | ER5356. 1. 2       | plane          | Double sided molding |
| aluminum alloy3.0           | 1050           | 3000                 | 100            | 35                   | 3. 0             | 15                       | ER5356. 1. 2       | interior angle | white                |
| aluminum alloy3.0           | 1200           | 3000                 | 100            | 35                   | 3. 0             | 15                       | ER5356. 1. 2       | External angle | penetration80%       |
| aluminium4.0                | 1700           | 3000                 | 100            | 20                   | 3. 5             | 12                       | 1. 6               |                |                      |



WC-Water Cooling Fiber Laser Cleaning Machine



PC-Air Cooling Pulse Laser Cleaning Machine



| MODEL                           | WC1000             | WC1500  | WC2000  | WC3000  |
|---------------------------------|--------------------|---------|---------|---------|
| Laser source                    | Raycus / MAX / BWT |         |         |         |
| Laser Power                     | 1000W              | 1500W   | 2000W   | 3000W   |
| Fiber cable Length              | 10M                |         |         |         |
| Clean Speed                     | ≤40 M²/Hour        |         |         |         |
| Voltage                         | 220V/2P            | 220V/2P | 380V/3P | 380V/3P |
| Working Environment Temperature | 5-40℃              |         |         |         |
| Power Adjustment Rang           | 0-1000W            | 0-1500W | 0-2000W | 0-3000W |
| Dimensions                      | 998*550*931mm      |         |         |         |
| Weight                          | 160KG              | 160KG   | 160KG   | 165KG   |

| MODEL                       | HTCM100            | HTCM200        | HTCM300            | HTCM500                  |
|-----------------------------|--------------------|----------------|--------------------|--------------------------|
| Laser Power                 | 100W               | 200W           | 300W               | 500W                     |
| Pulse frequency range       | 1-4000khz          | 1-4000khz      | 1-4000khz          | 40-3000khz               |
| Maximum pulse energy        | 1.5mJ              | 1.5mJ / 5mJ    | 1.5mJ / 5mJ / 15mJ | 15mJ                     |
| Pulse Width                 | 2-500ns Adjustable | 2-500ns        | 2-500ns            | 30-500ns                 |
| Fiber Cable Length          | 3 Meters           | 5 meters       | 5 meters           | 10 meters (customizable) |
| Laser wavelength            | 1070nm             | 1064nm         | 1064nm             | 1064-1070nm              |
| Operating temperature range | 5℃ - 40℃           |                |                    |                          |
| Machine size                | 617mm*469mm*291mm  | 560*640*1000mm | 570*650*1030mm     | 980mm*580mm*980mm        |
| Net weight                  | 28KG               | 58kg           | 67kg               | 180kg                    |

PM-Portable Fiber Laser Marking Machine



| MODEL                     | PM20                            | PM30 | PM50 | PM60 | PM100 |
|---------------------------|---------------------------------|------|------|------|-------|
| Output Power              | 20W                             | 30W  | 50W  | 60W  | 100W  |
| Overall Power Consumption | 460W                            | 490W | 550W | 580W | 700W  |
| Supply voltage            | 110V/220V、50/60Hz               |      |      |      |       |
| Galvo Head                | Sino RC 1001                    |      |      |      |       |
| Marking Area              | 110mm*110mm/200*200mm/300*300mm |      |      |      |       |
| Marking Linewidth         | 0.025mm                         |      |      |      |       |
| Minimum Character Size    | 0.15mm                          |      |      |      |       |
| Power Adjustment Range(%) | 0-100%                          |      |      |      |       |
| Marking Speed             | 0-1500mm/s                      |      |      |      |       |
| Fiber Cable Length        | 3m                              |      |      |      |       |
| Laser Wavelength          | 1064nm                          |      |      |      |       |
| Control Software          | EZCAD2                          |      |      |      |       |
| Machine Dimensions        | 350mm*600mm*380mm               |      |      |      |       |
| Laser Source              | MAX/Raycus/JPT                  |      |      |      |       |
| Machine Weight            | 35Kg                            |      |      |      |       |

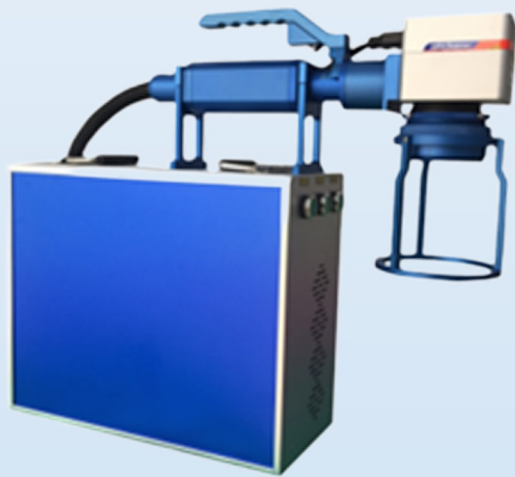
DM-Desktop Fiber Laser Marking Machine



| Model                      | DM20                          | DM30     | DM50     | DM60      | DM100     |
|----------------------------|-------------------------------|----------|----------|-----------|-----------|
| Output Power               | 20W                           | 30W      | 50W      | 60W       | 100W      |
| Overall Power Consumption  | 460W                          | 490W     | 550W     | 580W      | 700W      |
| Supply Voltage             | 110V/220V、50/60HZ             |          |          |           |           |
| Galvo Head                 | RC 1001                       |          |          |           |           |
| Laser Source               | JPT/MAX/RAYCUS                |          |          |           |           |
| Maximum Pulse Energy       | 0.8mJ                         | 0.8mJ    | 1.25mJ   | 1.5mJ     | 1.5mJ     |
| Frequency Adjustable Range | 1-600kHz                      | 1-600kHz | 1-600kHz | 1-4000kHz | 1-4000kHz |
| Laser Wavelength           | 1064nm                        |          |          |           |           |
| Beam Diameter              | 7 ± 0.5mm                     |          |          |           |           |
| Marking Area               | 100*100mm/200*200mm/300*300mm |          |          |           |           |
| Power Adjustment Range(%)  | 0-100%                        |          |          |           |           |
| Fiber Cable Length         | 3m                            |          |          |           |           |
| System Software            | EZCAD2                        |          |          |           |           |
| Machine Dimensions         | 600*775*1430mm                |          |          |           |           |
| Machine Weight             | 70Kg                          |          |          |           |           |

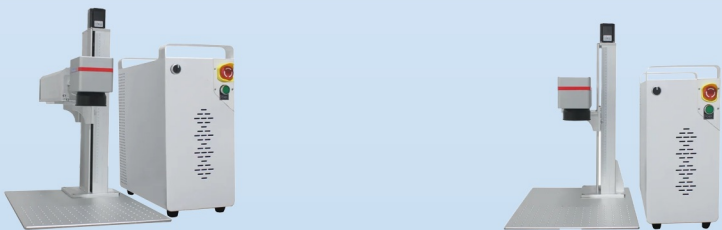


HM-Handhel Fiber Laser Marking Machine



| Model                     | HM-Mini20                  | HM-Mini30 | HM-Mini50 | HM20              | HM30 | HM50 |
|---------------------------|----------------------------|-----------|-----------|-------------------|------|------|
| Output Power              | 20W                        | 30W       | 50W       | 20W               | 30W  | 50W  |
| Overall Power Consumption | 460W                       | 490W      | 550W      | 460W              | 490W | 550W |
| Supply voltage            | 110V/220V 50/60Hz          |           |           |                   |      |      |
| Galvo Head                | ZBTK                       | ZBTK      | ZBTK      | RC 1001           |      |      |
| Marking Area              | 120mm*80mm                 |           |           |                   |      |      |
| Marking Linewidth         | 0.01mm-0.1mm               |           |           |                   |      |      |
| Minimum Character Size    | 0.15mm                     |           |           |                   |      |      |
| Power Adjustment Range(%) | 0-100(Gradient Adjustable) |           |           |                   |      |      |
| Marking Speed             | 0-7000mm/s                 |           |           |                   |      |      |
| Fiber Cable Length        | 3m                         |           |           |                   |      |      |
| Laser Wavelength          | 1064nm                     |           |           |                   |      |      |
| Machine Dimensions        | 270mm*155mm*245mm          |           |           | 350mm*600mm*380mm |      |      |
| Machine Weight            | 8.25Kg                     |           |           | 40Kg              |      |      |

SM-Split Fiber Laser Marking Machine



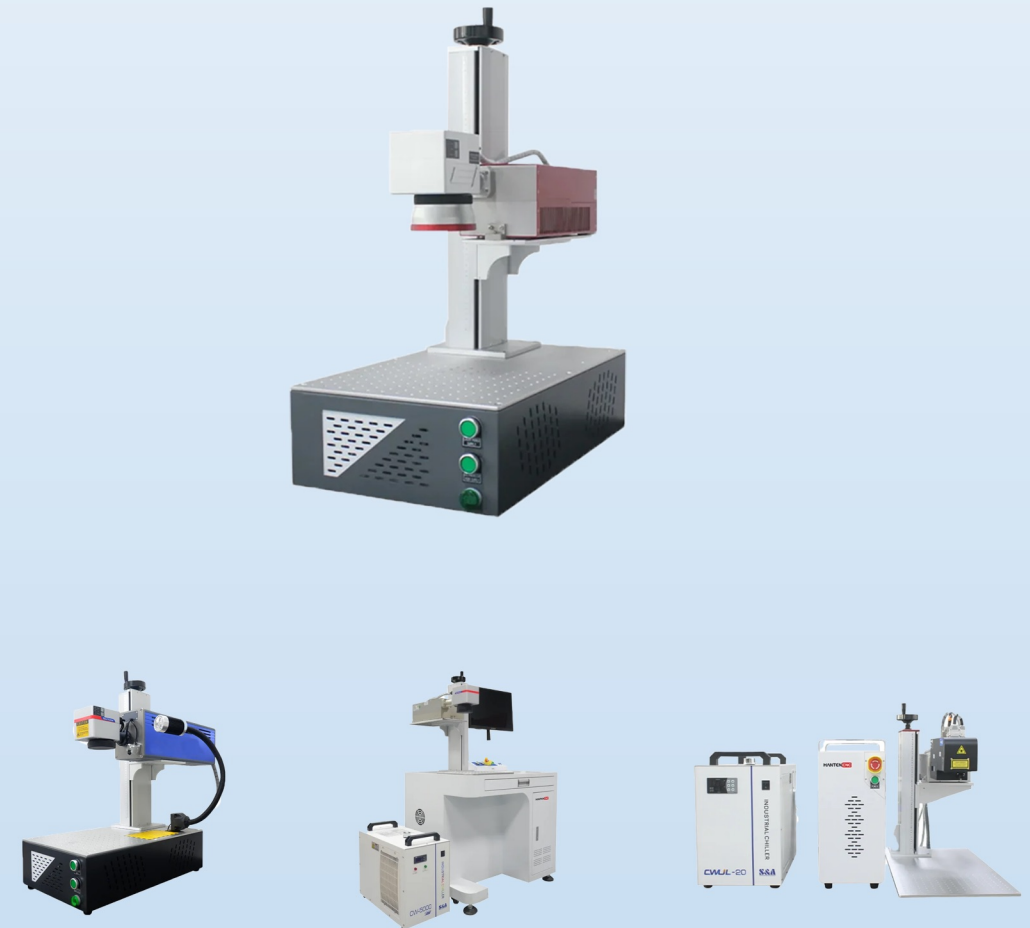
| MODEL                     | SM20                            | SM30 | SM50 | SM60 | SM100 |
|---------------------------|---------------------------------|------|------|------|-------|
| Output Power              | 20W                             | 30W  | 50W  | 60W  | 100W  |
| Overall Power Consumption | 460W                            | 490W | 550W | 580W | 700W  |
| Supply voltage            | 110V/220V 、 50/60Hz             |      |      |      |       |
| Galvo Head                | Sino RC 1001                    |      |      |      |       |
| Marking Area              | 110mm*110mm/200*200mm/300*300mm |      |      |      |       |
| Marking Linewidth         | 0.025mm                         |      |      |      |       |
| Minimum Character Size    | 0.15mm                          |      |      |      |       |
| Power Adjustment Range(%) | 0-100%                          |      |      |      |       |
| Marking Speed             | 0-1500mm/s                      |      |      |      |       |
| Fiber Cable Length        | 3m                              |      |      |      |       |
| Laser Wavelength          | 1064nm                          |      |      |      |       |
| Control Software          | EZZCAD2                         |      |      |      |       |
| Machine Dimensions        | 350mm*600mm*380mm               |      |      |      |       |
| Laser Source              | MAX/Raycus/JPT                  |      |      |      |       |
| Machine Weight            | 35Kg                            |      |      |      |       |

## FM-Flying Fiber Laser Marking Machine



|                           |                |          |          |           |           |
|---------------------------|----------------|----------|----------|-----------|-----------|
| Model                     | FM20           | FM30     | FM50     | FM60      | FM100     |
| Power                     | 20W            | 30W      | 50W      | 60W       | 100W      |
| Laser source              | JPT/MAX/Raycus |          |          | JPT       |           |
| Galvanometer              | Sino RC1001    |          |          |           |           |
| Laser quality             | < 1.5m²        | < 1.5m²  | < 1.8m²  | < 1.5m²   | < 1.4m²   |
| Chain cable length        | 2m             | 2m       | 3m       | 3m        | 3m        |
| Average output power      | > 20W          | > 30W    | > 50W    | > 60W     | > 100W    |
| Maximum pulse energy      | 0.8mJ          | 0.8mJ    | 1.25mJ   | 1.5mJ     | 1.5mJ     |
| Frequency range           | 1-600kHz       | 1-600kHz | 1-600kHz | 1-4000kHz | 1-4000kHz |
| Marking area              | 110mm*110mm    |          |          |           |           |
| Supply voltage            | 24V            | 24V      | 24V      | 24V       | 48V       |
| Supply current            | > 5A           | > 7A     | > 10A    | > 13A     | > 8A      |
| Maximum power consumption | < 110W         | < 150W   | < 220W   | < 300W    | < 400W    |
| Center wavelength         | 1064nm         |          |          |           |           |
| Beam diameter             | 7 ± 0.5mm      |          |          |           |           |
| Power regulation range    | 0-100%         |          |          |           |           |
| Machine weight            | 90kg           |          |          |           |           |
| Machine dimensions        | 980*740*1360mm |          |          |           |           |

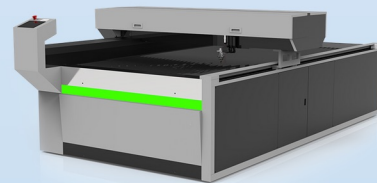
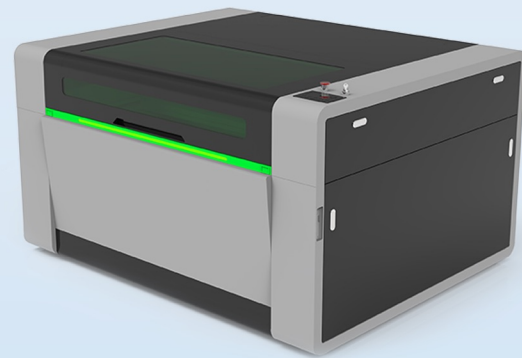
## CO2 UV MOPA-Laser Marking Machine



| MODEL              | UV-3                          | UV-5        | UV-15          | CO2-30        | CO2-40 | CO2-60 | MOPA-20    | MOPA30  | MOPA-60 | MOPA-100 |
|--------------------|-------------------------------|-------------|----------------|---------------|--------|--------|------------|---------|---------|----------|
| Power              | 3W                            | 5W          | 15W            | 30W           | 40W    | 60W    | 20W        | 30W     | 60W     | 100W     |
| Laser source       | JPT                           |             |                | Davi          |        |        | JPT/GZTECH |         |         |          |
| Central wavelength | 355nm                         |             |                | 10.6 μm       |        |        | 1064nm     |         |         |          |
| Frequency range    | 20 -150 kHz                   | 20 -150 kHz | > 15W@60kHz    | 0-25KHZ       |        |        | /          |         |         |          |
| Marking area       | 110*110mm/200*200mm/300*300mm |             |                |               |        |        |            |         |         |          |
| Beam quality       | M²≤1.2                        |             |                | /             | M²<1.3 | M²<1.2 | < 1.4m²    | < 1.4m² | < 1.5m² | < 1.6m²  |
| Beam diameter      | 0.55 ± 0.15mm                 |             |                | 1.8 ± 0.2mm   |        |        | 7 ± 0.5mm  |         |         |          |
| Galvo head         | RC7110                        |             | FEELTEK FR20-F | RC1001        |        |        |            |         |         |          |
| Machine net weight | 35kg                          |             |                |               |        |        |            |         |         |          |
| Size               | 600*350*830mm                 |             | 1300*600*200mm | 350*600*830mm |        |        |            |         |         |          |

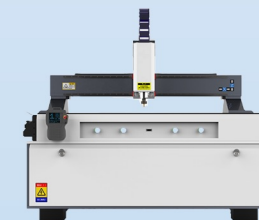


## CO2-CO2 Laser Engraving & Cutting Machine



| Model                | TW-CO2 3020                  | TW-CO2 4060 | TW-CO2 6090 | TW-CO2 1390 | TW-CO2 1812 | TW-CO2 1325 |
|----------------------|------------------------------|-------------|-------------|-------------|-------------|-------------|
| Working Area         | 300*200mm                    | 400*600mm   | 600*900mm   | 1300*900mm  | 1800*1200mm | 1300*2500mm |
| Laser Power          | 40/50/60/80/100/130/150/300w |             |             |             |             |             |
| Engraving Speed      | 0-18000mm/min                |             |             |             |             |             |
| Cutting Speed        | 0-6000mm/min                 |             |             |             |             |             |
| Positioning Accuracy | ± 0.01mm                     |             |             |             |             |             |
| CO2 Laser Tube       | Reci/EFR/Yongli              |             |             |             |             |             |

## CNC Router-Wood/Stone CNC Router Machine



| Model                        | TW-C 4040   | TW-C 4060 | TW-C 6090 | TW-C 1313   | TW-C 1325   | TW-C 1530   | TW-C 2030   | TW-C 2040   |
|------------------------------|---|-----------|-----------|-------------|-------------|-------------|-------------|-------------|
| Working Area                 | 400*400mm   | 400*600mm | 600*900mm | 1300*1300mm | 1300*2500mm | 1500*3000mm | 2000*3000mm | 2000*4000mm |
| Spindle Power                | 800W/1.5KW/2.2KW/3KW/3.5KW/4.5KW/5.5KW/6KW/7.5KW/9KW/12KW |           |           |             |             |             |             |             |
| Max. Rapid Travel Rate       | 33000mm/min   |           |           |             |             |             |             |             |
| Max. Working Speed           | 25000mm/min   |           |           |             |             |             |             |             |
| X,Y,Z repositioning Accuracy | ±0.01mm   |           |           |             |             |             |             |             |
| Spindle Brand                | HQD/HSD   |           |           |             |             |             |             |             |

CNC Lather-VMC



| Specifications                          | VMC650         | XK7136C          | VMC850         | VMC855         | VMC1060        | VMC1160          | VMC1370          | VMC1580        | VMC1890        |
|---|----------------|------------------|----------------|----------------|----------------|------------------|------------------|----------------|----------------|
| Working table size                      | 420×800        | 1250×360         | 500×1000       | 550×1000       | 600×1300       | 600×1200         | 700×1400         | 800×1600       | 900×2000       |
| Left and right stroke (X)               | 600            | 950              | 800            | 800            | 1000           | 1100             | 1300             | 1500           | 1800           |
| Before and after the trip(Y)            | 420            | 400              | 500            | 550            | 600            | 600              | 700              | 800            | 900            |
| Up and down trip(Z)                     | 500            | 500              | 550            | 550            | 600            | 600              | 700              | 700            | 680            |
| Spindle center to column guide distance | 550            | 460              | 556            | 595            | 655            | 650              | 755              | 855            | 950            |
| Spindle face to table distance          | 80-580         | 100-600          | 120-620        | 120-670        | 180-780        | 120-720          | 120-820          | 150-850/900    | 160-840        |
| T-slot (number/width/pitch)             | 3/18/2010      | 3/18/80          | 5/18/90        | 5/18/90        | 5/18/2020      | 5/18/2000        | 7/18/2000        | 7/18/2010      | 5/22/165       |
| Spindle specifications                  | BT40           | BT40             | BT40           | BT40           | BT40/150       | BT40/BT50        | BT40/BT50        | BT50           | BT50           |
| Spindle speed                           | 8000           | 60-8000/200-6000 | 8000           | 8000           | 8000           | 60-8000/200-6000 | 60-8000/200-6000 | 6000           | 8000           |
| The fastest speed of X.Y.Z axis         | 24/24/24       | 10/10/8          | 24/24/24       | 48/48/48       | 15/15/15       | 36/36/30         | 30/30/24         | 20/20/20       | 15/15/15       |
| Main motor                              | 7.5            | 7.5              | 7.5            | 7.5            | 7.5-11         | 11               | 11               | 15/18.5        | 15-18.5        |
| Cutting feed rate                       | 1-5000         | 1-2000           | 1-10000        | 1-10000        | 1-10000        | 1-10000          | 1-10000          | 1-10000        | 1-10000        |
| positioning accuracy                    | 0.010          | 0.02             | 0.010          | 0.010          | 0.010          | 0.010            | 0.010            | 0.015          | 0.015          |
| Repeatability                           | 0.006          | 0.01             | 0.006          | 0.006          | 0.006          | 0.006            | 0.006            | 0.010          | 0.010          |
| Workbench bearing                       | 500            | 500              | 400            | 500            | 800            | 800              | 1000             | 1000           | 1600           |
| Machine size                            | 2300×2200×2490 | 2220×1850×2350   | 2500×2240×2350 | 2500×2240×2450 | 3250×2700×2700 | 3150×2530×2450   | 3500×2530×2600   | 4200×3000×2900 | 5100×3800×3200 |
| Machine tool weight(approx.)            | 4500           | 4600             | 5500           | 5500           | 800C           | 10000            | 12000            | 15000          | 16000          |

CNC Lather- CK/CAK



| Specifications              | CK6130         | CK6132         | CK6136                   | CK6140                   | CK6150                   | CK6180                   | CK61100                  |
|-----------------------------|----------------|----------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Max.swing over bed nm       | φ300           | φ320           | φ360                     | φ400                     | φ500                     | φ800                     | φ1000                    |
| Swing over cross slide mm   | φ100           | φ90/φ110       | φ190                     | φ210                     | φ295                     | φ480                     | φ660                     |
| Max.processing length nm    | 260/320        | 290/400        | 650/850/1450             | 650/850/1450             | 650/850/1450             | 1400/2900/4900           | 1400/2900/4900           |
| X/Z axis trave mm           | 300/350        | 300/380        | X:220<br>Z:750/1000/1500 | X:240<br>Z:750/1000/1500 | X:300<br>Z:750/1000/1500 | X:450 Z:1500/3000/5000   | X:530 Z:1500/3000/5000   |
| Spindle nose                | φ41            |                | C6                       | C6                       | C6                       | C11                      | C11                      |
| Spindle bore mm             | 2500           | 2500           | 52                       | 52                       | 52                       | φ105                     | φ130                     |
| Spindle taper               | 160            | 160            | MT6                      | MT6                      | MT6                      | 120:1:20                 | 140:1:20                 |
| Spindle motor kW            | 4              |                | 4                        | 4                        | 5.5                      | 11                       | 15                       |
| X/Z axis feed motor torque  | X:4 Z:4        | X:4 Z:4        | 4/6                      | 4/6                      | 4/6                      | 10/15(30)                | 15/22                    |
| X/Z Rapid traverse m/min    | X:8 Z:10       | X:8 Z:10       | X:4 Z:6                  | X:4 Z:6                  | X:4 Z:6                  | 4/5                      | 4/5                      |
| X/Z axis repeatability mm   | ±0.005         | ±0.005         | ±0.005                   | ±0.005                   | ±0.005                   | ±0.005                   | ±0.005                   |
| Tailstock sleeve dia. mm    | φ52            | D60            | 65                       | 65                       | 75                       | φ100                     | φ100                     |
| Quill traverse mm           | 90             | 100            | 120                      | 140                      | 140                      | 250                      | 250                      |
| Quilltape                   | MT4            | MT4            | MT4                      | MT5                      | MT5                      | MT6                      | MT6                      |
| Cutting tool shape size mm  | 6×16           | 16×16          | 20×20                    | 25×25                    | 25×25                    | 32×32                    | 40×40                    |
| Machine dimension(L×W×H) mm | 1600×1100×1650 | 1750×1150×1650 | 2500×1500×1650           | 2500×1500×1650           | 2500×1500×1690           | 3300/3800/4300×2000×2000 | 4750/5500/8500×1920×1800 |
| Net weight (about) kg       | 950            | 1200           | 1550                     | 1800                     | 2150                     | 3900/4500/5400           | 6000/8500/13500          |