ONELASER

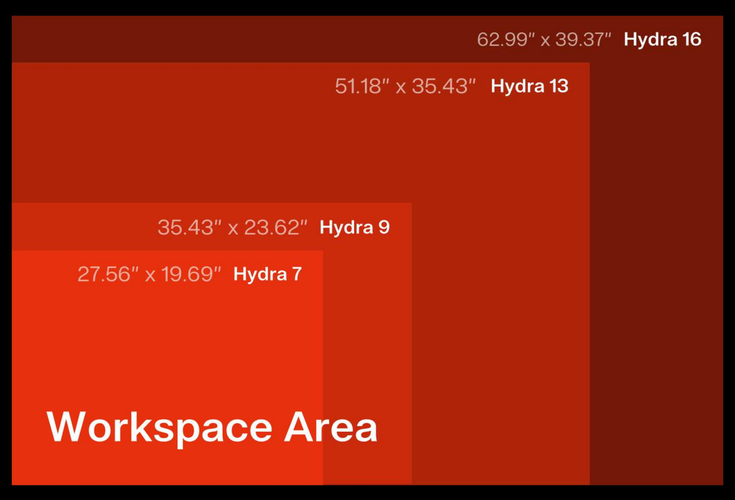
Hydra Gen2

The Endgame of Performance Lasers

Why Choose Hydra Gen2 ?

OneLaser Hydra Gen2 is a high-performance laser powerhouse designed to exceed professional expectations. Equipped with industrial-grade technology, precision-engineered components, and seamless intelligent software integration, it delivers uncompromising quality in engraving, cutting, and versatile production. More than just a laser machine—it's your competitive edge in manufacturing.

- The dual-laser configuration of Hydra Gen2 shatters material constraints, elevating versatility, performance, and ROI to unprecedented heights.
- Whether engraving, cutting, or marking acrylic, wood, metal, or other substrates, it empowers creative production across all scales.
- Equipped with 10 pioneering innovations, Hydra Gen2 delivers faster, cleaner, and smarter results—redefining professional laser efficiency.



Hydra Can Do Far More
Than You Dare To Dream...

Laser Engraving

Photo Engraving
Rubber Stamp
Glass Etching
Leaf Engraving
EVA Flip Flop
Clothes Etching
Tumblers
Keyboard Caps
Coasters
Stone Engraving
Engrave Mirror
Wine Bottle Etching

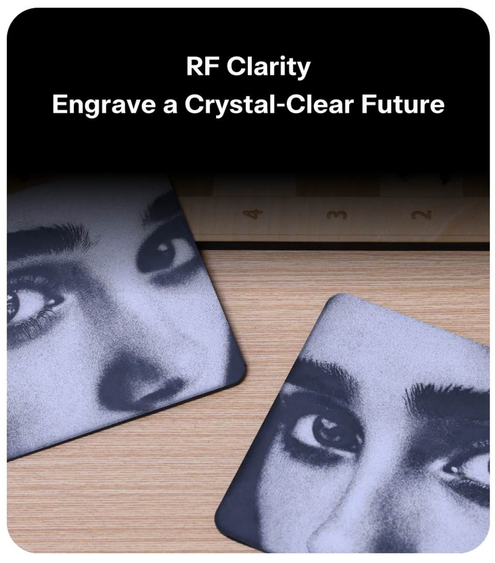
Laser Cutting

Wood Cutting
Photo Frames
Paper Artwork
Festival Decoration
Film Cutting
Architectural Models
Signage
Name Plate
3D Models
Wood Puzzles
Wedding Gifts
Toys & Games

Laser Marking

Custom Jewelry
Leather Wallet
Metal Pet Tag
Card Holder
Metal Wax Seals
Flasks
Ceramic Mug
Titanium Color Engraving
Guns Marking
Blade Marking
Souvenir Coins
Medical Part Marking

10 Key Innovations



01 Real Speed to Elevate New Benchmark

Hydra Gen2 features an all-new ultra-high-speed DC servo motor, delivering a true 2,000 mm/s, 4G acceleration speed. With superior mechanical design, building quality and validation control, it maintains sharp detail even at maximum speed. This is real, production-grade performance—not a theoretical spec, which means higher output—and higher profit.

02 Built-in Airflow That Thinks For You

The Smart Dual Air-Assist System auto-switches between Low-Air for clean, detailed engraving corners and High-Air for faster cutting speed and safety. Fully automatic, software-integrated, and no manual tuning needed—delivering cleaner edges and better results every time.

03 All Material Engraving? YES!!!

The Hydra Gen2 platform takes material versatility to the next level. To unlock advanced metal-processing capabilities, we developed the new Q-Switch Fiber 30W / 50W Upgrade Kit. This optional module empowers Hydra G2 with high-speed, Industrial performance, large-format, 2.5D flying metal engraving and marking performance.

04 1 Hydra. 3 Technologies. ∞ Possibilities.

Users can configure a 38W RF high-speed engraving tube paired with a high-power glass CO2 tube, enabling our patented multi-laser intelligent switching within a single workflow on LightBurn and MakerBoost.

Alternatively, users can choose a 70W RF tube of Hydra Gen2 combined with a Q-Switch Fiber module, unlocking true all-material processing capability—from ultra-fine CO2 engraving to industrial-grade metal marking. (The Dual-Laser 38W model does not support the fiber-laser upgrade package unless the unit is upgraded to the 70W version).

05 RF Clarity: Engrave a Crystal-Clear Future

Hydra RF lasers deliver a tighter, rounder, and higher-frequency beam spot, enabling higher DPI and up to 4× ultra-sharp detail with uniform energy distribution. High-power 70w RF delivers consistent depth and flawless grayscale response, making true 3D photorealistic engraving possible.

06 RF Value: Simpler. Safer. Higher ROI.

The air-cooled RF design requires no chiller—eliminating leaks, condensation, tube explosions, and electrical risks while drastically cutting failures and maintenance. It's sealed laser source lasts 20,000–30,000 hours, far outlasting glass tubes with slower decay, less downtime, and near-zero upkeep. No constant tube replacement costs. Long-term ROI increases dramatically, keeping your machine running and earning.

07 Variable-PWM RF — One Laser, Every Task.

High-frequency, adjustable PWM allows RF lasers to maintain fine detail and high precision during ultra-high-speed engraving. When the frequency is reduced, pulse energy increases dramatically, delivering far stronger penetration. Under the same wattage, RF systems achieve up to 1.85× deeper cuts than glass tubes, combining elite engraving and cutting performance in one.

08 Real-Time Lens Protection

The system monitors lens temperature in real time and warns you of overheating or contamination before damage occurs. This proactive protection prevents burnt lenses, extends the life of expensive optics, and keeps your machine running safely and consistently with lower maintenance costs.

09 No Calibration. Pure Stability.

Our no-calibration mechanical architecture ensures unmatched stability and consistent output over long production cycles. Industry-leading structural rigidity and optical stability minimize drift, reduce rework, and deliver true high-reliability manufacturing performance.

10 Visual Accuracy, Unlocked.

Enables visual positioning with millimeter-level accuracy, unlocking more creative possibilities.

The Cores of High-Performance

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38W/70W RF high-speed engraving tube

Efficient Part Rapid Production

Boast some of the industry's quickest pulse rise and fall times — ideal for high-speed engraving and cutting processes.

Reliable Beam Quality

Delivers stable, top-tier beam performance through lengthy production runs, securing clean cuts and uniform engraving every single time.

High Duty Cycle for Industrial Use

Built for continuous operation, the RF tube supports long-duty production shifts without thermal drift or loss in precision.

RF Value: Simpler. Safer. Higher ROI

Air-cooled RF: No chiller/risk, cuts failures/maintenance. Sealed laser (20k –30k hrs) outperforms glass tubes. No tube costs → higher ROI, non-stop operation.

Precise Edges, Little to No Post-Processing

Produces sharp vector cuts with little charring or melting, lowering finishing requirements and boosting overall throughput.

Q-Switch Fiber module

High-Velocity Metal Marking

Realize high-speed direct marking on metals, plastics, and coated surfaces — suitable for serial numbers, barcodes, and logos in industrial environments.

High-Depth Engraving Capability

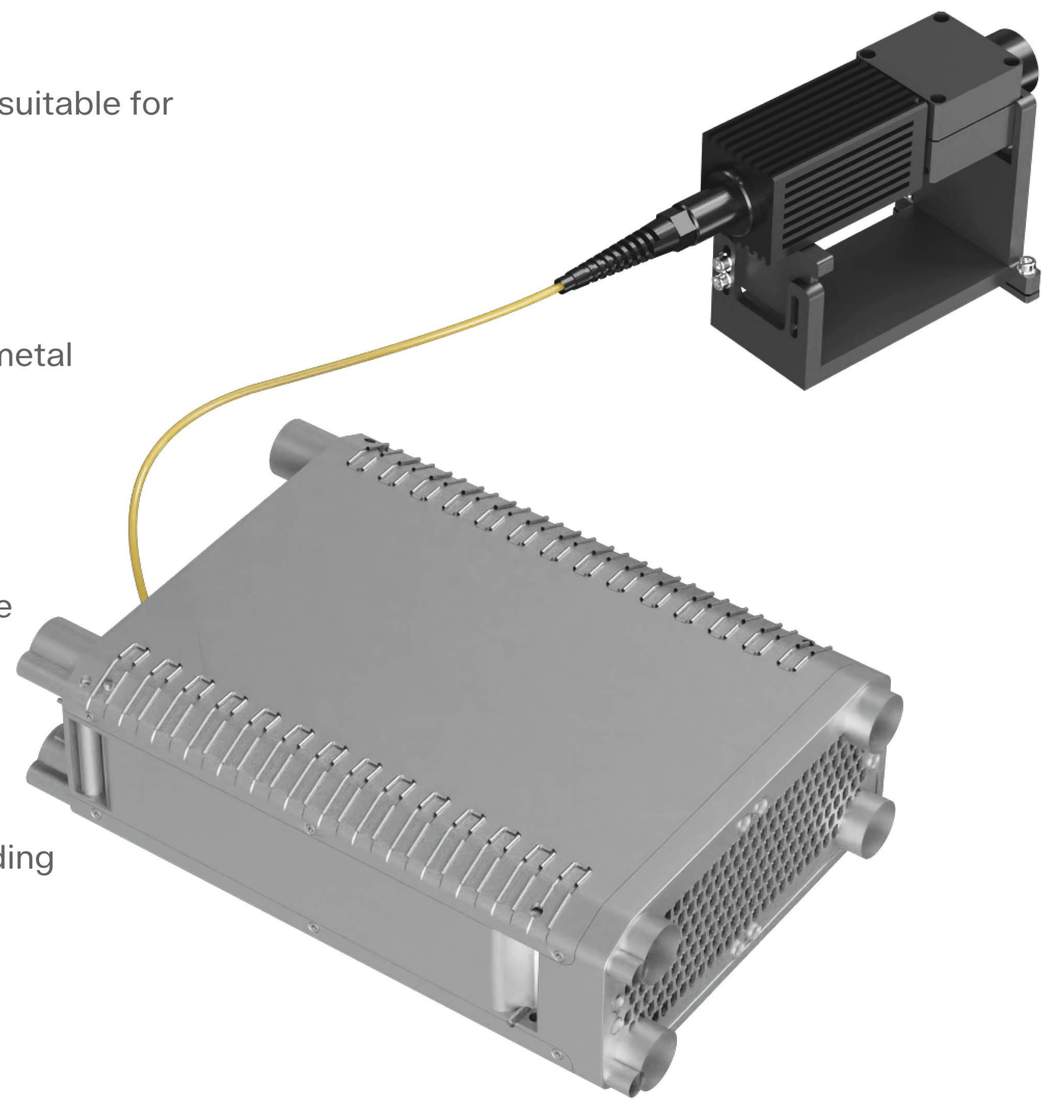
Elevated peak power and configurable pulse duration enable deep, accurate metal engraving while reducing heat-affected areas to a minimum.

Reliable, Non-Maintenance Operational Capability

Engineered for industrial uptime — air-cooled, solid-state design eliminates the need for alignment, features low noise, and requires no consumables.

Configurable Pulse Shaping for Material Versatility

Modify pulse width and frequency to accommodate diverse materials — including brass, aluminum, plastic, and coated metals — all from one single source.



Precise, Powerful, & Fit for Every Scenario

Large-Format Marking

Unlock new potential in metals and stone. The Hydra RF Metal Tube enables effortless engraving of large-format stainless steel, aluminum, and marble, delivering sharp details with minimal effort.

STEAM Education

Across STEAM classrooms and makerspaces, Hydra empowers students and educators to prototype, create, and explore, delivering industrial-grade precision for applications from wood engraving to robotics components.

Workshop

Take your workshop to the next level with the OneLaser Hydra. It excels at precise engraving and batch production on diverse materials — an absolute must for professionals and experts!

Industrial Part Marking

Require fast, permanent traceability? Hydra provides high-contrast marking on metals and composites — ideal for serial numbers, QR codes, and compliance labeling at scale.

Customization Business

Engrave premium products with exquisite detail — from branded wooden boxes to metal tags. The OneLaser Hydra equips personalization studios to deliver flawless results for a wide range of client requests.

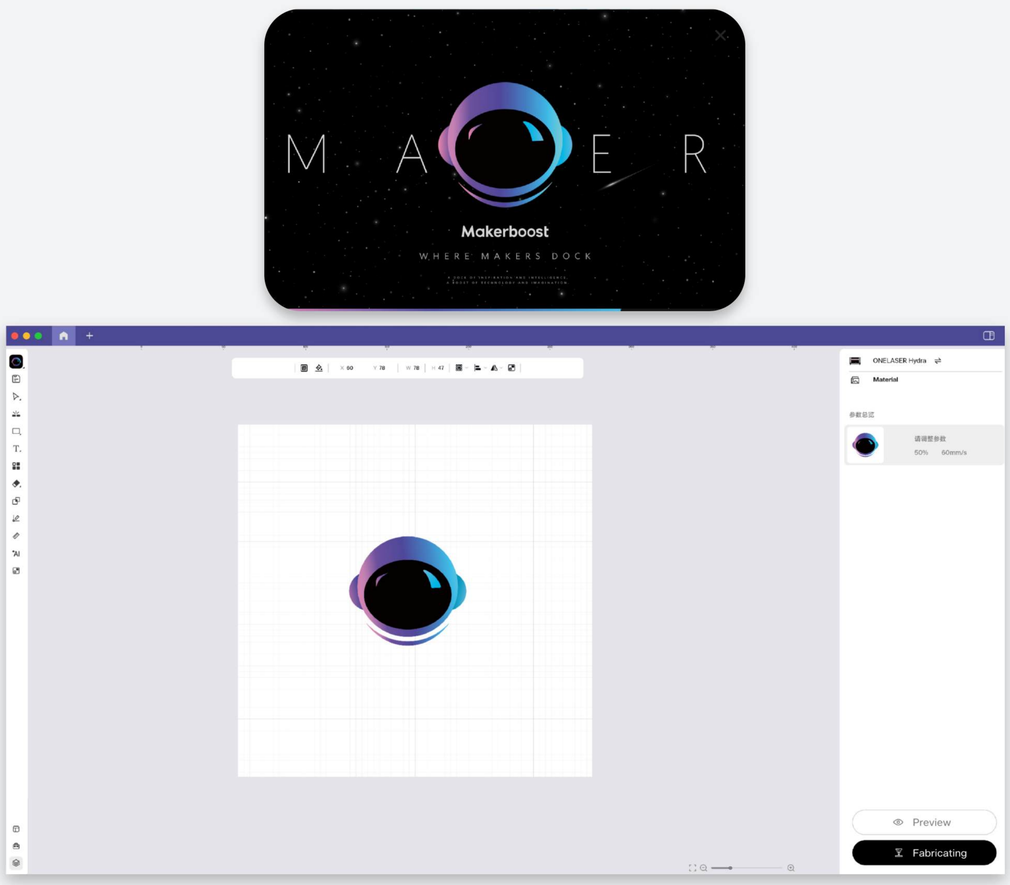
Small-Batch Manufacturing

Scale up without the hassle! Hydra tackles custom and repeat jobs with equal ease — a game-changer for small manufacturers navigating diverse materials and tight deadlines.

Makerboost

Built by OneLaser. Optimized for Hydra.

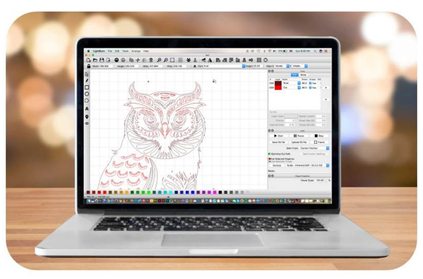
Makerboost goes beyond mere compatibility — it's fully integrated into the Hydra platform, with functions designed exclusively for high-efficiency engraving, batch coding, and intelligent alignment. It provides operators with robust tools through a streamlined interface and automates tasks that previously demanded additional steps.



Key Advantages of Makerboost on Hydra:

- Auto Device Detection: Automatically identifies the Hydra model and laser power, applying the correct parameters instantly.
- Mark Point Recognition: Automatically detects registration marks to ensure accurate alignment for print-and-cut applications.
- Smart Variable Data Support: Effortlessly generate barcodes, QR codes, serial numbers, and dynamic text from CSVs or templates for efficient batch engraving.
- Advanced Output Optimization: Fine-tune images, add lead-in/out lines, and apply kerf offset to achieve cleaner cuts, precise fits, and professional engraving results.

"Makerboost + Hydra = Quick setup, fewer mistakes, seamless workflow — ready to go instantly."



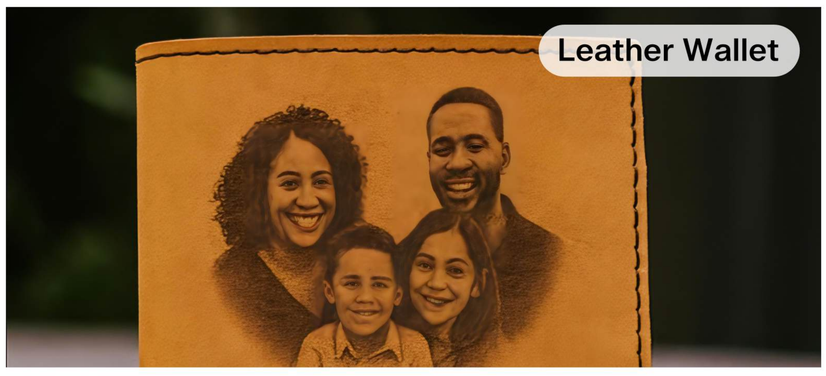
Compatible with LightBurn and supported formats: AI, PDF, SC, DXF, HPGL, PLT, RD, SCPRO2, SVG, LBRN, BMP, JPG, JPEG, PNG, GIF, TIF, TIFF, and TGA

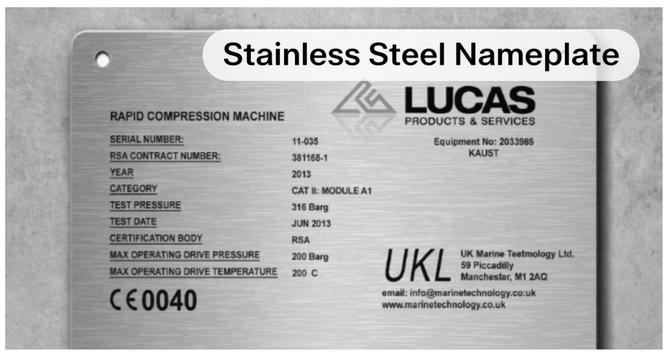
Material Compatibility: Hydra vs. Hydra Gen2

Materials	Hydra	Hydra Gen2
Wood	Cutting, Engraving	Cutting, Engraving
Cork	Cutting, Engraving	Cutting, Engraving
Acrylic	Cutting, Engraving	Cutting, Engraving
Fabric	Engraving	Engraving
Glass	Engraving	Engraving
Plastic	Cutting, Engraving	Cutting, Engraving
Mirror	Engraving	Engraving
Food	Engraving	Engraving
Ceramics	Engraving	Engraving
Stone	Engraving	Engraving
Leather	Cutting, Engraving	Cutting, Engraving
Rubber	Cutting, Engraving	Cutting, Engraving
MDF	Cutting, Engraving	Cutting, Engraving
Cardboard	Cutting, Engraving	Cutting, Engraving
Anodized Aluminium	Marking/Etching	Marking/Etching
Slate	Engraving	Marking/Etching
Stainless Steel		Marking/Etching
Titanium Sheet		Marking/Etching
Brass		Marking/Etching
Nickel		Marking/Etching

Cutting Engraving Marking/Etching

Unlimited Possibilities Unlocked by Hydra





Hydra Gen2 Model Comparison & Specs

Models	Hydra 7 (70W RF)	Hydra 9 (38W RF + 100W DC)	Hydra 9 (70W RF)	Hydra 13 (38W RF + 130W DC)	Hydra 13 (70W RF)	Hydra 16 (38W RF + 150W DC)	Hydra 16 (70W RF)
Machine Size							
Workspace Area	27.56″ x 19.69″ (700mm x 500mm)	35.43″ x 23.62″ (900mm x 600mm)	35.43″ x 23.62″ (900mm x 600mm)	51.18″ x 35.43″ (1300mm x 900mm)	51.18″ x 35.43″ (1300mm x 900mm)	62.99″ x 39.37″ (1600mm x 1000mm)	62.99″ x 39.37″ (1600mm x 1000mm)
Z-Axis Max Bed Travel	8.86" (225mm)	8.86" (225mm)	8.86" (225mm)	8.86" (225mm)	8.86" (225mm)	8.86" (225mm)	8.86" (225mm)
Machine Size	L51.2" * W41.1" * H40.7" (L1300*W1045*H1035mm)	L74.8" * W41.1" * H40.7" (L1900*W1045*H1035mm)	L59" * W41.1" * H40.7" (L1500*W1045*H1035mm)	L74.8" * W56.9" * H40.7" (L1900*W1445*H1035mm)	L74.8" * W56.9" * H40.7" (L1900*W1445*H1035mm)	L86.6" * W60.8" * H40.7" (L2200*W1545*H1035mm)	L86.6" * W60.8" * H40.7" (L2200*W1545*H1035mm)
Machine Weight	555.56 lb(252kg)	628.32 lb(285kg)	628.32 lb(285kg)	932.56 lb(423kg)	932.56 lb(423kg)	1058.22 lb(480kg)	1058.22 lb(480kg)
Laser Source							
RF Metal CO2 Laser	70w RF Metal-sealed CO2 Laser	38w RF Metal-sealed CO2 Laser	70w RF Metal-sealed CO2 Laser	38w RF Metal-sealed CO2 Laser	70w RF Metal-sealed CO2 Laser	38w RF Metal-sealed CO2 Laser	70w RF Metal-sealed CO2 Laser
RF Metal CO2 Laser Cooling Method	Air Cooling	Air Cooling	Air Cooling	Air Cooling	Air Cooling	Air Cooling	Air Cooling
DC Glass CO2 Laser	\	100w DC Glass Tube CO2 Laser	\	130w DC Glass Tube CO2 Laser	\	150w DC Glass Tube CO2 Laser	\
DC Glass CO2 Laser Cooling Method	\	Water Cooling	\	Water Cooling	\	Water Cooling	\
Q-Switch Fiber Upgrade Package	Q-Switch 30w/50w Mopa 60w	\	Q-Switch 30w/50w Mopa 60w	\	Q-Switch 30w/50w Mopa 60w	\	Q-Switch 30w/50w Mopa 60w
Higher RF Upgrade Package	\	70w RF Upgradable	\	70w RF Upgradable	\	70w RF Upgradable	\
Performance							
High Speed Servo motor	Yes（X - axis）	Yes（X - axis）	Yes（X - axis）	Yes（X - axis）	Yes（X - axis）	Yes（X - axis）	Yes（X - axis）
Real Time Acceleration (RTA)	4G	4G	4G	4G	4G	4G	4G
Raster Engraving Speed (RES)	2000mm/s	2000mm/s	2000mm/s	2000mm/s	2000mm/s	2000mm/s	2000mm/s
Vector Maximum Speed (VMS)	4000mm/s	6000mm/s	6000mm/s	8000mm/s	8000mm/s	10,000mm/s	10,000mm/s
Minimum Engraving Size / Minimum Font Size	1.0 x 1.0mm	1.0 x 1.0mm	1.0 x 1.0mm	1.0 x 1.0mm	1.0 x 1.0mm	1.0 x 1.0mm	1.0 x 1.0mm
Repeated Positioning Accuracy	<= 0.01mm	<= 0.01mm	<= 0.01mm	<= 0.01mm	<= 0.01mm	<= 0.01mm	<= 0.01mm
Max Scanning Precision	2000DPI	2000DPI	2000DPI	2000DPI	2000DPI	2000DPI	2000DPI
Max Lifting Capacity	44.09 lb(20kg)	66.14 lb(30kg)	66.14 lb(30kg)	66.14 lb(30kg)	66.14 lb(30kg)	66.14 lb(30kg)	66.14 lb(30kg)
Configuration							
Rotary	Any 4-Pin Rotary will work	Any 4-Pin Rotary will work	Any 4-Pin Rotary will work	Any 4-Pin Rotary will work	Any 4-Pin Rotary will work	Any 4-Pin Rotary will work	Any 4-Pin Rotary will work
Air Assist	Smart Dual Air-Assist (Built-in)	Smart Dual Air-Assist (Built-in)	Smart Dual Air-Assist (Built-in)	Smart Dual Air-Assist (Built-in)	Smart Dual Air-Assist (Built-in)	Smart Dual Air-Assist (Built-in)	Smart Dual Air-Assist (Built-in)
Auto Focus	✓	✓	✓	✓	✓	✓	✓
Smart Focus Lens Thermal Monitoring	✓	✓	✓	✓	✓	✓	✓
Red Dot Positioner / Red Dot Positioning	✓	✓	✓	✓	✓	✓	✓
Material Pass Through Door	H0.79"(20mm)	H0.79"(20mm)	H0.79"(20mm)	H0.79"(20mm)	H0.79"(20mm)	H0.79"(20mm)	H0.79"(20mm)
Bullseye Leveling Gauge	✓	✓	✓	✓	✓	✓	✓

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