



FV Series 5-Axis Fiber Laser

A Masterpiece of Engineering



CUTTING EDGE

The FV 5-axis HIGH-PERFORMANCE LASER CUTTING SYSTEM combines Mitsubishi's latest developments in machine, CNC control and fiber laser design technologies to keep you on the cutting edge. Mitsubishi's FV 5-axis laser cutting system includes the machine base, precision helical rack and pinion motion system, automated safety doors, teach pendant, M800 CNC controller, and a Mitsubishi Laser oscillator.

FRAME

The FV uses an innovative double-rail gantry motion system for high-speed, accurate cutting and 4G H-axis acceleration for high-speed height sensing—a combination that delivers the fastest processing in Mitsubishi Electric's history.



FEATURES

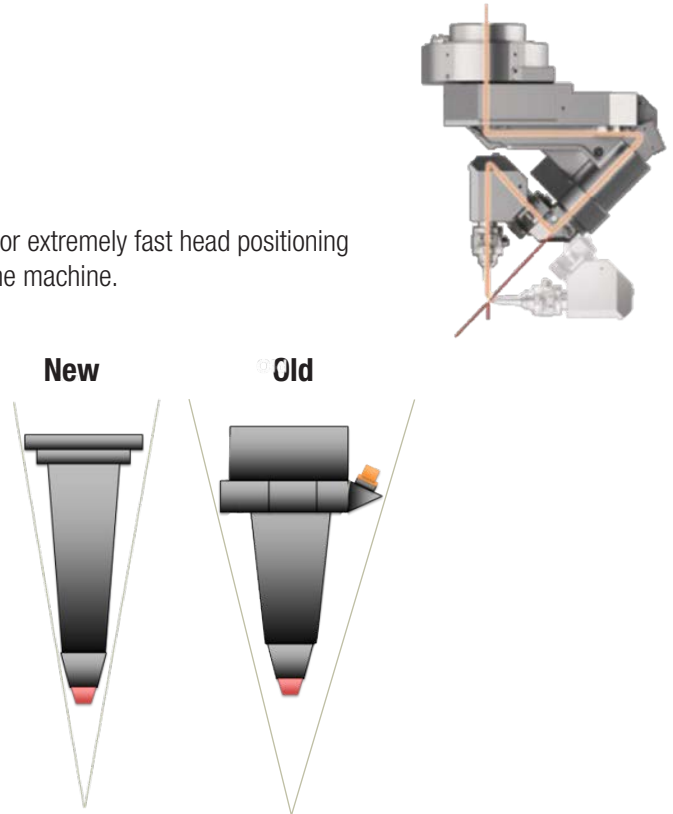
Zero Offset Head

The FV laser utilizes a zero offset head which allows for extremely fast head positioning while maximizing the overall workpiece envelope of the machine.

- New sensor cone and nozzle design
- Magnetic crash protection
- 1 G acceleration

H-Axis

- +/- .393" (10mm) stroke
- 4G acceleration
- Improved trace speed to support processing speeds up to 2000 IPM



ML4020FV1-F40

MAGNETIC CRASH PROTECTION

- Faster recovery time - Faster recovery time means less down time. Restart cutting in less than one minute.
- Cost effective - No need for sacrificial hardware, and the risk of damage to the drive system is greatly reduced.

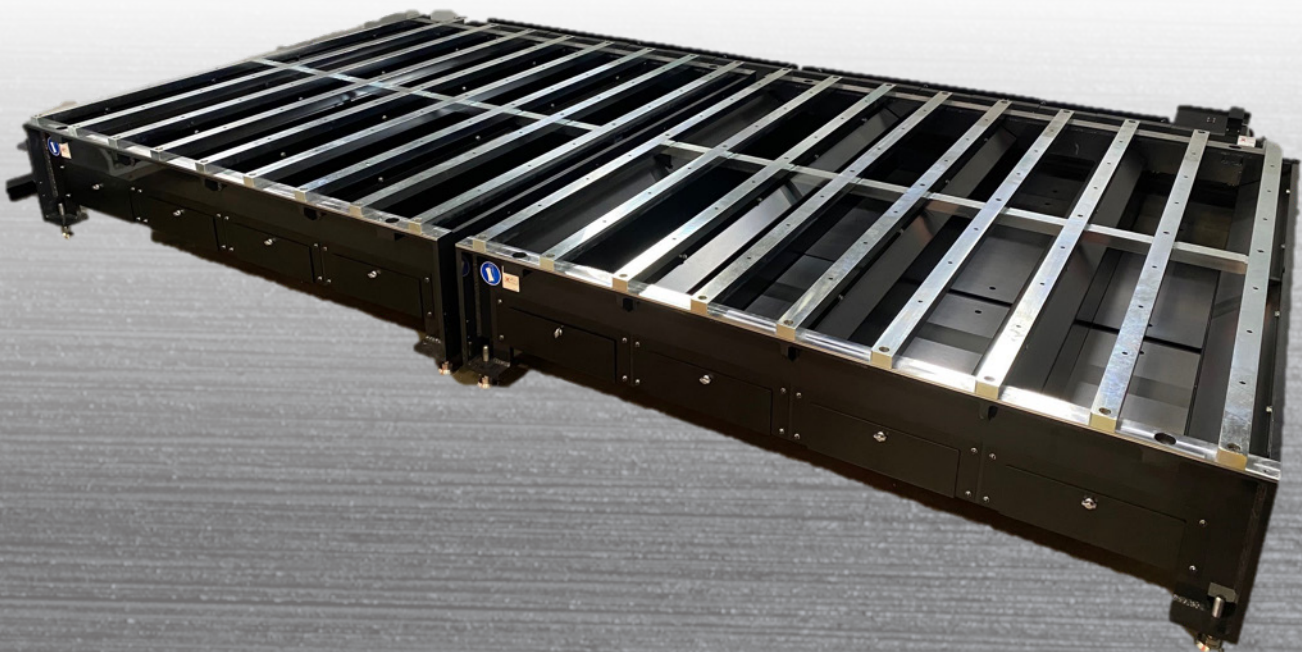




DOWN DRAFT FIXTURE TABLE

The FV machine design features a new open architecture fixture table, allowing easy access to cut parts and material loading/unloading. Its' heavy-duty table design can handle both 3D fixtures as well as flat plate. For oversized fixtures, roof access is available via two sliding panels. The system also includes a segmented down draft design for efficient dust collection.

- Segmented dust collection
- Scrap removal access doors
- Two piece design [One side can be removed for large custom fixtures]
- Open bar design [Allows for clamping and bolt down of fixtures]



M800 CONTROL

The M800 control enhances the already easy-to-use platform of the previous 5-axis systems. The new control improves maximum processing speed while also improving accuracy and reducing processing time on small geometries and holes. New control features include a customizable home page, expanded cutting condition library and robust maintenance screens.

- Adjustable M800 19" smooth operation control
- User-customizable home screen
- Cutting condition libraries
- 3D graphical interface for part and program interaction
- Run time estimator
- Real-time tracking of electrical and assist gas consumption
- Custom ECO modes
- ADVANCED help and maintenance screens
- Keyboard and mouse included
- Manual handle box
- New 3D high-speed path control



MITSUBISHI ELECTRIC FIBER LASER OSCILLATOR

The all-new all-Mitsubishi oscillator delivers the latest in reliability and performance.

- Total service support with all-Mitsubishi made key components.
- Improved processing capability achieved by Mitsubishi-original back reflection beam isolation and beam mode stabilization technology.
- High-speed response control is achieved by complete compatibility between the Mitsubishi oscillator and the Mitsubishi CNC.
- High reliability with a standard 5-year parts warranty supported by the preventive maintenance analysis tool.
- Improved processing stability by enabling the most suitable beam quality for processing.
- Stable processing of different materials available attributable to less variation in beam quality.
- Enabled N2 cutting of pure copper by our originally developed back reflection technology.
- Dynamic Power Reserve coupled with Mitsubishi's Extended Lifetime Structure design ensures stable power output over the life of the oscillator.



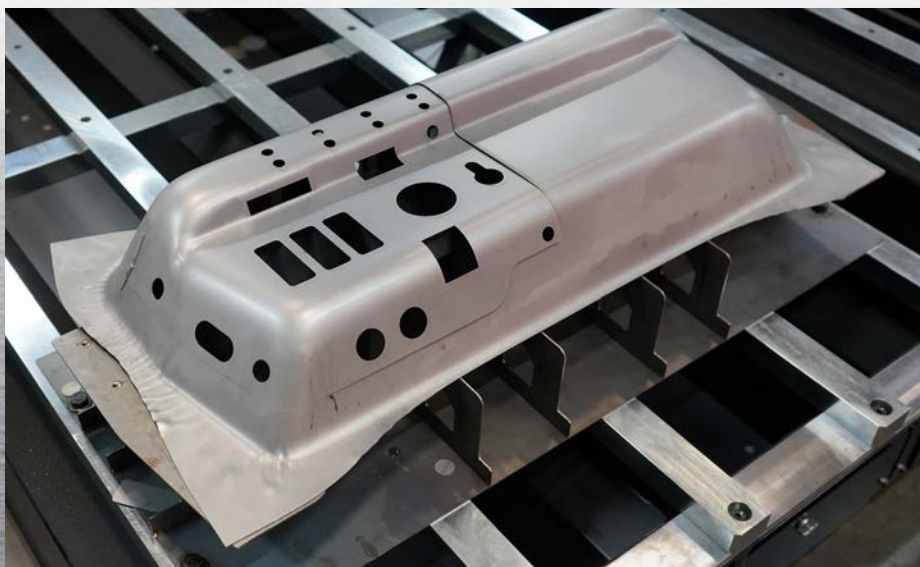
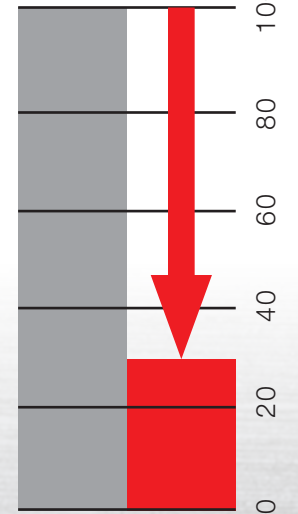
4020 VZ10 AND FV1 COMPARISON

The FV processes the same part 3x faster. The FV cutting speed is 10x faster.



	VZ-10	FV-1
Max Traverse Speed	1700 IPM	4000 IPM
Max Cutting Speed	200 IPM	2000 IPM
Head Axis Speed	360 DPS	540 DPS
Acceleration G Force	0.2	1.0
Cycle Time (min:sec)	2:10	:40

70% Reduction
in Cycle Time



Material: Galvanized Steel

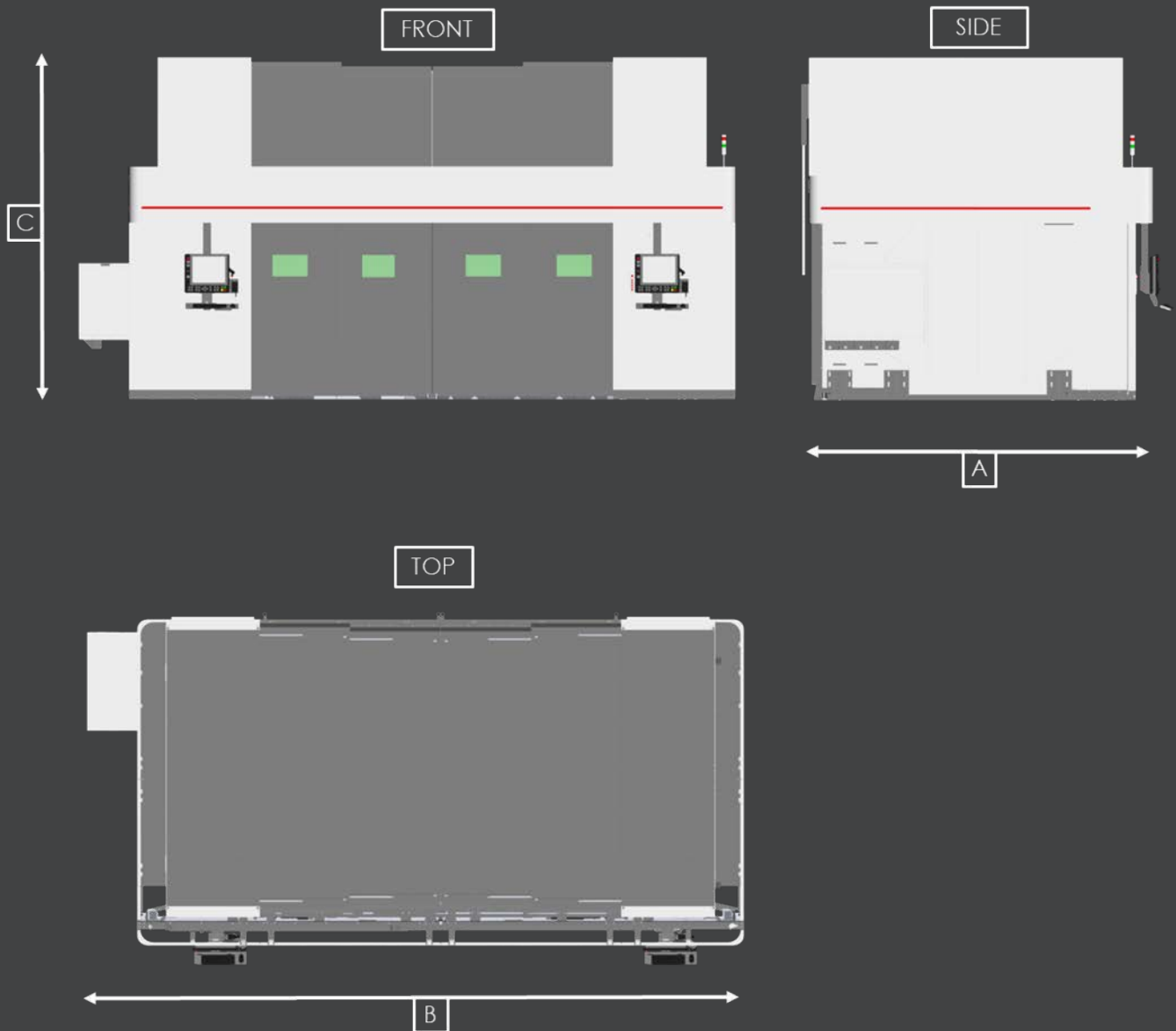
Thickness: .04"

SPECIFICATIONS

LASER MACHINE	ML 4020 FV1
Machine Structure	Enclosed Flying Optic 5-Axis with Welded Frame
Travel Drive Method	X-Y-Z Helical Rack and Pinion W-U Belt Drive
Processing Head Style	Zero-Offset with H-Axis
Control Method	X,Y,Z,W,U simultaneous 5-Axis control
X - Axis Stroke	159" (4040 mm)
Y - Axis Stroke	79.5" (2020 mm)
Z - Axis Stroke	33.4" (850 mm)
W- Axis Stroke	± 360°
U - Axis Stroke	± 180°
H - Axis Stroke	± .393" (10 mm)
Max Work Piece Size X	159" (4040 mm)
Max Work Piece Size Y	79.5" (2020 mm)
Max Work Piece Size Z	33.4" (850 mm)
Max Traverse Speed X,Y, Z	3937 in/min (100 m/min)
Max Traverse Speed W,U	540 (°/sec)
Max Work Piece Weight	2205 lbs. (1000 kg)
Minimum Command Input	0.0001" (.001 mm)
Drive Motor Type	Intelligent AC Servo
Repeatability (X, Y, Z)	±0.00039" (±0.010mm)
Machine Unit Dimensions	299"x 169" x 156"(7580x4280x3952mm)
Total System Weight	39684 lbs. (18000 kg)

Laser Oscillator Specifications		
Oscillator/Resonator	MF20-S	MF40-S
Excitation Method	Fiber Optic	Fiber Optic
Rated Output Power (CW)	2000 watts	4000 watts
Control Method	Power Feedback	Power Feedback
Wave Length	1.07 µm	1.07 µm
Electrical Requirements: Motion System, Control, Oscillator	208 VAC +/- 5%, 3 Phase, 60Hz 26 KVA (Total Machine Usage) (Full Load Amps)	208 VAC +/- 5%, 3 Phase, 60Hz 28 KVA (Total Machine Usage) (Full Load Amps)

LAYOUT



A - System Width	169" (4280 mm)
B - System Length	299" (7580 mm)
C - Machine Tool Height	156" (3952 mm)

*Note: This system layout is for visual reference only, and should never be used for facility placement. All sizes, dimensions, and specifications may differ from the final installed system. Please refer to the facilities manual and installation guide for the exact layout and requirements. All sizes, dimensions and specifications are subject to change without notice. This layout does not include ancillary equipment such as Chiller, Dust collection, transformers, or assist gas systems.

PREMIER TRAINING, SERVICE AND SUPPORT

Regionalized Service Network

With our industry-leading regionalized service network, we have the most experienced, knowledgeable and responsive employees in the industry. We're here for you with phone support, operation training, on-site service, parts inventory and a robust, interactive website.

- With regionalized locations throughout North America, we can respond promptly to your service needs.
- We have the largest fleet of service vehicles in the field—three times more than any other company in the industry.
- From installation and on-site training to support and service throughout the life of your system, our national service network is just a phone call away.
- You'll have access to 24/7 support, a detailed interactive parts catalog, printable machine manuals and software.

Application Support

The value of our support stretches well beyond service, parts and training. Our experienced and creative team members put their knowledge and problem-solving skills to work for you—offering application and engineering support that includes creating specialized shop-floor setups that work harder and get better results. Whether developing integrated manufacturing cells from the ground up or adding specific solutions to complement existing operations, our pre-sales, sales, installation and application support staff can help you eliminate bottlenecks, improve accuracy and drive throughput.



MC MACHINERY SYSTEMS, INC.

a subsidiary of  Mitsubishi Corporation



MC MACHINERY SYSTEMS, INC.

85 Northwest Point Blvd., Elk Grove Village, IL 60007 | Tel: 630-616-5920, Fax: 630-616-4068 | www.mcmachinery.com