FROM MITSUBISHI LASER

THE eX SERIES

5TH GENERATION FLYING OPTIC CO₂ LASER

NOW AVAILABLE WITH 60XF RESONATOR
THE REVOLUTIONARY NEW eX SERIES
OUR 5TH GENERATION HIGH SPEED FLYING OPTIC CO₂ LASER

The eX series is designed to meet the needs of the most demanding users in today’s 24/7 competitive manufacturing environment. Built on a heavy duty, single platform, the eX incorporates important advancements over the previous LVP model. Faster movement, more powerful piercing and an ECO mode that provides even more running cost savings to the most cost friendly machine in the market today.
CONTINUOUS IMPROVEMENT

At its core all Mitsubishi companies are working towards continuous improvement. It’s our corporate mission and it is put to the test by our people, our services and especially our product. Mitsubishi design and manufactures every critical component that goes into every Mitsubishi Laser System. Every individual component is performance-matched to excel in the most demanding environments. Advanced CAE models were employed to develop the stable and accurate high-speed eX system design. Solid dianite machine casting ensures high rigidity, strength and system stability while oversized precision linear guides on both X and Y axes result in longer life. The eX also features Helical Rack and Pinion on the X and Y axes resulting in faster movement and a more quiet operation.

UNIQUE FEATURES OF THE eX

- Gas change time is improved by 60% over previous model, approximately 10 minutes from start up time

- Helical Rack and Pinion reduces noise, and allows for an increase in acceleration in X and Y axes and provides increased accuracy and longer life time

- Magnetic Head is standard on 45CF-R and 60XF Models, allowing for quicker recovery after collision

- Built in Jet Pierce provides the ability to aggressively pierce mild steel

- New Mitsubishi Control with Faster graphical interface, USB compatibility and expanded programming options

- ECO MODE available for increased energy savings

- New PHXS Head has new lens cartridge design which allows for more constant centering and the focus lens will achieve better performance due to this design change. The PHXS Head allows for a 10” focal length option

- Improved Diamond Path Technology for constant beam control and exceptional cutting performance

- New Options are Available to increase and expand your productivity:
  - Nozzle Changer  • High Peak Pierce
  - Rotary Axis  • High Accuracy Positioning Function
MITSUBISHI 700 SERIES CONTROL

TAKE CONTROL OF YOUR CUTTING

Competing manufacturers’ PC-based controls can’t touch the sophistication of the new Mitsubishi 700 Series CNC controls. Mitsubishi has utilized its vast experience developing the most sophisticated and accurate controls for laser machines and implemented new nanotechnology for finer, faster interpolation with greater power. Our CNC controls include a 15-inch touch screen, 64-bit Windows XP, ethernet for input/output and a USB port for further flexibility.

700 SERIES CNC ALSO FEATURES:

- Dedicated nano-control for highest precision machining
- Newest RISC-CPU and high-performance ASIC
- Improved and accelerated graphics with superior NC design simplify operations
- Network function adaptable for diverse factory environments
- USB Compatable
- Sheet detection
- LAN-Ethernet connectivity
- Decreased graphic time
- Increased cutting condition database
- Improved help diagnostic functions
- Micro-joint function
- 20 GB Hard Drive
- 2 Action Cutting provides automatic setup and easy operator interface
  Step 1 - use barcode reader and automatically load onto NC from CAD/CAM computer
  Step 2 - once data loaded, head moves to start postions, automatically measures the tilt, the size and the edge of the workpiece, and starts cutting
- New Reset - Restart Function
- Simple Nesting - rectangular nesting of dissimilar parts at control
- Advanced help and maintenance screens are a great aid for operators
- ECO Mode is available and can reduce your running cost by 99% while in standby
- Economical Nitrogen Cutting can reduce your nitrogen assist gas usage by 30%

Handle Box and Bar Code Reader combine for a more user friendly experience.
High Peak Pierce Technology will produce smaller pierce holes faster in mild steel up to 1.0" (25mm) in thickness by controlling the oxidation reaction and optimizing beam quality. You can realize up to 52% reduction in processing time.

High Accuracy Positioning Function: This function allows you to position based on a round or square hole from a pre-processed part from a turret punch press. Additional laser cutting of embossed areas is also possible along with sheet edge detection.
RESONATORS

MITSUBISHI’S EXCLUSIVE
X-FLOW R AND XF SERIES RESONATORS

- Revolutionary “Dual” Cross-Flow design maximizes beam quality and stability
- DiamondClean™ Technology provides ultra-clean resonator materials that yield higher performance and greater stability
- Lower gas costs – consumes up to 90% less gas than traditional fast-flow systems
- Extended maintenance intervals equal less maintenance
- Improved power supply provides high efficiency, stability, reliability and lower maintenance
- Fast startup
- Designed and manufactured exclusively by Mitsubishi
- 3.5, 4.5 and 6.0kW resonators available
- Enhanced rectangular wave pulse
- No chemical additives for chiller

MF200A300AR

MITSUBISHI’S SUPERIOR
“CUTTING POWER”

Output power alone does not define cutting performance or cut edge quality. It takes superior “cutting power” to achieve high-performance results. Cutting power is optimized by creating the perfect blend of output power, beam quality, beam stability and power control. The results are visible through superior edge quality, lower thermal effects, precision cutting ability and greater overall processing control.
BRILLIANT NEW TECHNOLOGY

Mitsubishi’s new state-of-the-art BrilliantCUT technology can produce a cutting surface near-machined finish—eliminating secondary operations and decreasing production times. The eX Series reaps the benefits of this innovative, optimal machine tool beam path design. The new CF-R resonator has increased beam characteristics and a new control method for the high-peak rectangular-pulse platform, providing optimal processing conditions for the resonator. It also features new nozzle technology for improved cutting surface quality.

BrilliantCUT is ideal for stainless steel applications 1/2” (12.7 mm) and up. With an increased focus margin, processing stability is increased for a more consistent cut. BrilliantCUT also provides better part straightness by controlling the Kerf on the bottom of the part. And, the ability to control the heat affected zone of the material (bottom of part) eliminates the need for secondary processes. Simply brilliant.

*Data to the right is for reference. Surface discoloration may differ depending on material, thickness, processing condition or state of the processing machine.

PLASMA GUARD CONTROL

Conventional lasers exhibit a crude transition as speed increases from starting point to corner. Plasma Guard Control restricts the generation of plasma in mid-thick stainless steel, allowing for a much smoother acceleration. Increased corner speeds maintain superior cutting quality and stability for maximum precision production.

- Plasma Guard (PG) Control
  smoothly steps up acceleration on the pierce line and corner sections.

- PG control restricts the generation of plasma in Stainless Steel Plate which improves cutting quality, cutting stability and ease of use.
HEAD & MOTION SYSTEM

MITSUBISHI’S PATENTED DIAMOND PATH TECHNOLOGY

• Maintains a constant beam quality by fixing the system’s beam path length regardless of processing head location
• Achieves superior cut edge quality and processing consistency over the entire work area
• Provides a stable cutting beam at high speeds across all processing areas at speeds of up to 1,970 in/min (50 m/min)
• Ensures consistent corner-to-corner cutting on any application
• Integrated Beam Optimizer automatically adjusts the beam characteristics for maximum processing speed and efficiency
• Lens failure detection feature (good for automation) comes standard on 45CF-R and 60XF

Diamond Path Advanced Beam Delivery System
Highly stable processing at every point in the processing area

NEW MITSUBISHI PHXS HEAD

The XS-Series Head

• The new standard in processing head technology manufactured by and for MITSUBISHI LASER
• Accommodates 5.0", 7.5" and 10" focal lengths
• Cartridge recognition. The zero focus position is memorized. No need to focus between cartridge changes
• Faster lens movement speed
• Long focus stroke
• Centering is supplied on the cartridge instead of the head, allowing for easier nozzle centering
• Optional nozzle changer automates the nozzle change process for up to five nozzles simultaneously
• ME functions are available
• Auto focus preset head (standard)
• The focus adjustment uses a motorized lens system. When the cutting condition is searched, the lens is moved to focus position automatically
• Quick-change lens cartridge
• Built in Jet Pierce provides the ability to aggressively pierce mild steel
• Antiplasma Height Control ignores plasma generated while processing thin materials at high-speed. A constant gap is maintained
VERSATILE AND EXPANDABLE AUTOMATION

Auto-Flex MSC III (Multiple Shelf Changer) Series is versatile and expandable. Mitsubishi offers several high-production options that can transform and expand the eX System for maximum versatility and throughput. Current Mitsubishi users can add an eX to an existing automated system. That’s the expandability of Mitsubishi.

TANDEM LOAD/UNLOAD SYSTEM

• Full load/unload cycle in approximately 65 seconds
• Heavy duty with up to 1 inch full sheet load/unload capacity
• Second material pickup loading station allows simultaneous preparation
• 4 motorized carts 2 load, 2 unload working simultaneously to increase throughput
• 11,000 lb per cart capacity
• 5x10 machines can accept raw material in 4x4, 4x8, 4x10 and 5x10 sizes

MULTIPLE SHELF TOWER

• Integrates a low-profile storage tower with 6,000 lb shelf capacity
• Up to 20 shelves can be added to one tower for a total of 120,000 lbs. of material capacity
• Heavy duty with up to 1 inch full sheet load and unload capacity
• Full load/unload cycle time in approximately 65 seconds
• 11,000 lb per cart capacity

TWO LASER SYSTEM

• Add a second laser to maximize productivity. A two laser FMS system allows up to six product carts for total capacity of 66,000 lbs. Compatible with NX and LVP models.
• Heavy duty with up to 1 inch full sheet load and unload capacity
• Full load/unload cycle time in approximately 65 seconds
• 11,000 lb per cart capacity

NEW FSC COMPACT SYSTEM

• Completely modular and expandable
• Lighting-fast system cycle time – full load/unload cycle in approximately 75 seconds
• Vacuum load system with thickness detection and sheet separator features
• Heavy-duty clamshell fork unload system with built in sheet raking system
• Heavy-duty up to 1” full size sheet load/unload capacity

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The Industry's Most Responsive Service And Support

With more than 100 employees, our regionalized Service Network is the most advanced and responsive team in the industry. We’re here for you with phone support, operation training, on-site service, parts inventory and a robust, interactive website. With 20 locations throughout North America, and more scheduled to open, we can respond promptly to your service needs. For the best on-site customer service capabilities, we have more than 25 vans 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. No other company has a greater depth of experience and resources than Mitsubishi and MC Machinery Systems. Access 24/7 support with our interactive website, a detailed interactive parts catalog, printable machine manuals and software.

At MC Machinery Systems our number 1 goal is customer satisfaction. We have invested greatly in our infrastructure to better serve our customer base with a state of the art call center, regional service and support and millions of dollars of parts inventory. Now we are excited to introduce the next generation of service tools from MC Machinery systems, Inc. MC Remote 360. This is a robust production monitoring and support solution geared to provide transparency to your laser cutting process. MC Remote 360 provides real-time data to help increase productivity, improve efficiency, and reduce down time for your MC Remote 360 enabled machine.

MC Remote 360 provides
- End User machine monitoring through web enabled device
- MMS Remote Diagnostics & Fault Monitoring Service
- MMS Remote Support Service

Your MC Remote 360 machine can be monitored from many different devices
- Java based PC dashboard
- Mobile Android devices (V2.3+)
- Mobile Apple devices (iOS V4+)
- Apple Tablets (iOS V4+)
- Android tablets (V2.3+)

As long as a live internet connection is accessible, the machines can be monitored from virtually anywhere.
FABRICATION PRODUCT LINE

RX Series

Elite XL Series

Smart XL Series

Diamond BB Series

Diamond BH Series

eX Series

NX-F

VZ Series

HV Series

Automation: MSCIII

eXS Series

NX Series

XL Series

Tanaka LMZv

Tanaka LMRv

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### Processing Machine Specifications

<table>
<thead>
<tr>
<th>Model Name</th>
<th>3015 eX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine structure</td>
<td>X/Y - Precision Rack &amp; Pinion - Z - Precision Ball Screw</td>
</tr>
<tr>
<td>Travel drive method</td>
<td>X-Y-Z simultaneous 3 axes (2 axis height control is also possible)</td>
</tr>
<tr>
<td>Max. workpiece size (inch)</td>
<td>120.1 x 60.0 (3050mm x 1525mm)</td>
</tr>
<tr>
<td>Table pass height</td>
<td>34.6 (870mm)</td>
</tr>
<tr>
<td>Processing access</td>
<td>Automatic Up/Down Door</td>
</tr>
<tr>
<td>Pallet changer</td>
<td>Provided</td>
</tr>
<tr>
<td>X-axis stroke (inch)</td>
<td>122 (3,100 mm)</td>
</tr>
<tr>
<td>Y-axis stroke (inch)</td>
<td>61 (1,550 mm)</td>
</tr>
<tr>
<td>Z-axis stroke (inch)</td>
<td>5.9 (150 mm)</td>
</tr>
<tr>
<td>Rapid travel speed (X, Y) (inch / min)</td>
<td>3940 (100m/min)/5500 (141m/min) simultaneous</td>
</tr>
<tr>
<td>Max. processing feedrate (inch / min)</td>
<td>1970 (50m/min)</td>
</tr>
<tr>
<td>Precision Positioning precision (inch)</td>
<td>0.001920 (0.05/ 500mm) X, Y axis, 0.00394 (0.01/ 100mm) Z axis</td>
</tr>
<tr>
<td>Drive motor type</td>
<td>Intelligent AC Servo</td>
</tr>
<tr>
<td>Max. workpiece weight (lb)</td>
<td>2060 (930 kg)</td>
</tr>
<tr>
<td>Machine unit dimensions (W x H x D) (inch)</td>
<td>428.6 x 93.7 x 127.8 (CFR)</td>
</tr>
<tr>
<td>Machine system weight (lb)</td>
<td>28090 (12740 kg)</td>
</tr>
<tr>
<td>Machine power requirements</td>
<td>71 kVA (35CF-R), 77 kVA (45CF-R), 98 kVA (60XF)</td>
</tr>
</tbody>
</table>

### Control System Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Self-contained</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>64-bit</td>
</tr>
<tr>
<td>Display screen</td>
<td>15” TFT color LCD Touch screen</td>
</tr>
<tr>
<td>Hard disk</td>
<td>20.0 GB</td>
</tr>
<tr>
<td>Generator output control</td>
<td>Output Power, Frequency, Duty</td>
</tr>
<tr>
<td>Generator operation control</td>
<td>Beam ON/OFF, laser gas change, etc.</td>
</tr>
<tr>
<td>Drive system</td>
<td>X, Y, Z simultaneous control</td>
</tr>
<tr>
<td>Position detection system</td>
<td>Encoder</td>
</tr>
<tr>
<td>Min. command input</td>
<td>.001 mm / .0001”</td>
</tr>
<tr>
<td>Program input system</td>
<td>USB, Computer Link, Ethernet LAN</td>
</tr>
</tbody>
</table>

### Pallet Changer Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>P7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive mechanism</td>
<td>Chain</td>
</tr>
<tr>
<td>Pallet change time (sec)</td>
<td>Approx. 30</td>
</tr>
<tr>
<td>Work clamps</td>
<td>2 sets on Y axis</td>
</tr>
<tr>
<td>Pallet capacity (lb)</td>
<td>2050/pallet (930 kg)</td>
</tr>
<tr>
<td>Pallet changer weight (lb)</td>
<td>4500 (2,040 kg)</td>
</tr>
<tr>
<td>Applicable machine size</td>
<td>3015 (5’ x 10’), 3015 eX (6’ x 10’), 3015eX (6’ x 10’)</td>
</tr>
</tbody>
</table>

### CO₂ Laser Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>35CF-R</th>
<th>45CF-R</th>
<th>60XF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excitation method</td>
<td>Maximum output power (W)</td>
<td>3500</td>
<td>4500</td>
</tr>
<tr>
<td>Control method</td>
<td>Rated output power (W)</td>
<td>3500</td>
<td>4500</td>
</tr>
<tr>
<td>Power stability</td>
<td>Beam mode</td>
<td>Power feedback</td>
<td></td>
</tr>
<tr>
<td>Beam characteristics</td>
<td>Beam outer diameter (inch)</td>
<td>Low-order (main component TEM₅₄⁺)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beam divergence (mrad)</td>
<td>1.02 (26 mm)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Laser gas composition</td>
<td>Approx. 3.5 or less (total angle)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Laser gas consumption rate (liter/Hr)</td>
<td>O₂, CO₂, N₂, He</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gas sealing time (during rated continuous oscillation) (Hr)</td>
<td>8:4:0:28</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wave length (µm)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frequency setting range (Hz)</td>
<td>24 (pluring rated continuous oscillation)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Duty range (%)</td>
<td>10.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Duty range (%)</td>
<td>0–100 adjustable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Output power adjustable range (%)</td>
<td>0–100 of rating</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Resonator unit dimensions (W x H x D) (inch)</td>
<td>98.4 x 71.3 x 31.5 (2,500 x 1,800 x 800 mm)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Resonator unit weight (lb)</td>
<td>4850 (2,200 kg)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chiller power requirements</td>
<td>46 KVA</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>30 208 VAC ±10% 60Hz</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>120 Full Load Amps</td>
<td></td>
</tr>
</tbody>
</table>

3015eX

428.6" x 127.8"

This product complies with CFR 1040.10. Data provided in this brochure is for reference only.