

FROM MITSUBISHI LASER

THE *exS*



5TH GENERATION FLYING OPTIC CO<sup>2</sup> LASER

ENTRY LEVEL PRICE, SUPERIOR LEVEL CUTTING PERFORMANCE

# THE NEW eXs

## THE REVOLUTIONARY NEW eXs OUR 5TH GENERATION HIGH SPEED FLYING OPTIC CO<sup>2</sup> LASER

The eXs is designed to meet the needs of the most demanding users in today's 24/7 competitive manufacturing environment. 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 eXs 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 eXs 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 eXs

- 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
- 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
- Nozzle Changer Option is now available

# 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 Compatible
- 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 nitrogen assist gas usage by 30%



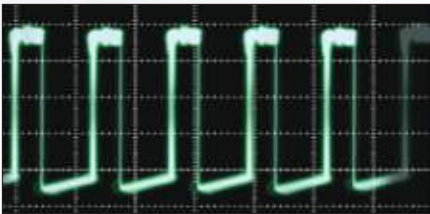
Handle Box and Bar Code Reader combine for a more user friendly experience. Bar Code Reader optional.

# RESONATORS

## Lowest cost of ownership

Mitsubishi resonators are so reliable and efficient that they've never needed to be replaced – eliminating a potentially expensive repair.

The innovative Cross-Flow design consumes up to 90% less gas than traditional fast-flow systems, giving our resonators the lowest cost of ownership on the market.



## MITSUBISHI'S PATENTED RESONATORS

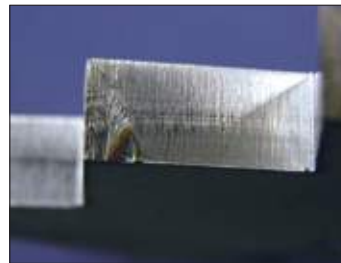
- Revolutionary Cross-Flow design maximizes beam quality and stability
- DiamondClean™ Technology provides ultra-clean resonator materials that yield higher performance and greater stability
- Lower gas costs – consumes up to 90% less gas than traditional fast-flow systems
- Extended maintenance intervals equal less maintenance
- Improved power supply provides high efficiency, stability, reliability and lower maintenance
- Fast startup
- Designed and manufactured exclusively by Mitsubishi
- 2.7kW resonators available
- Enhanced rectangular wave pulse
- No chemical additives for chiller

## PLASMA GUARD CONTROL

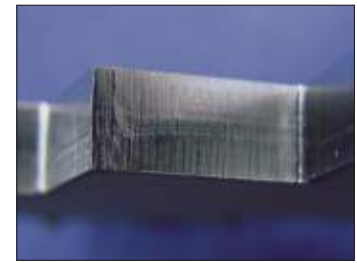
Conventional lasers exhibit a crude transition as speed increases from starting point to corner. Plasma Guard Control restricts the generation of plasma in mid-thick stainless steel, allowing for a much smoother acceleration. Increased corner speeds maintain superior cutting quality and stability for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

\*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 off



Plasma Guard Control on

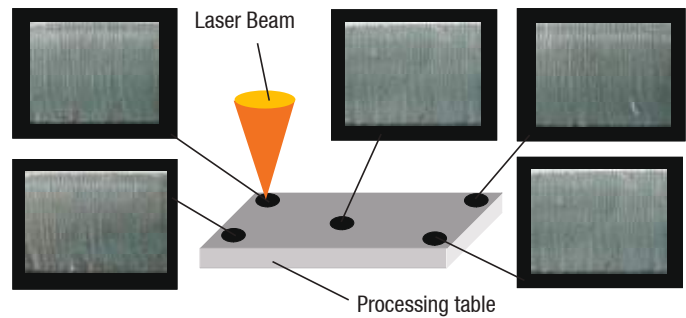
# HEAD & MOTION SYSTEM

## 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

### 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
- 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

# AUTOMATION

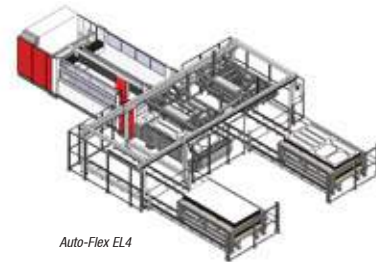


## VERSATILE AND EXPANDABLE AUTOMATION

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

### TANDEM LOAD/UNLOAD SYSTEM

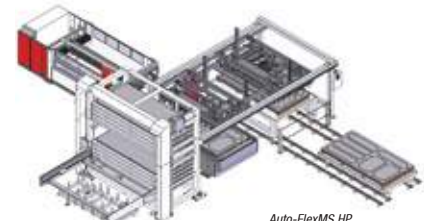
- Full load/unload cycle in approximately 65 seconds
- Heavy duty with up to 1 inch full sheet load/unload capacity
- Second material pickup loading station allows simultaneous preparation
- 4 motorized carts 2 load, 2 unload working simultaneously to increase throughput
- 11,000 lb per cart capacity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



Auto-Flex EL4

### MULTIPLE SHELF TOWER

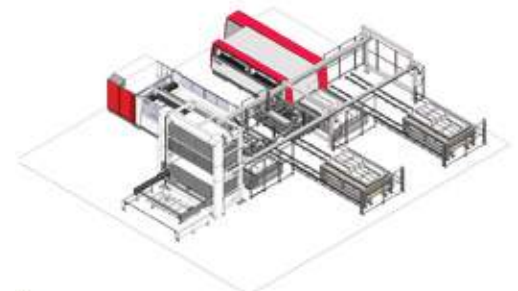
- Integrates a low-profile storage tower with 6,000 lb shelf capacity
- Up to 20 shelves can be added to one tower for a total of 120,000 lbs. of material capacity
- Heavy duty with up to 1 inch full sheet load and unload capacity
- Full load/unload cycle time in approximately 65 seconds
- 11,000 lb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



Auto-FlexMS HP

### TWO LASER SYSTEM

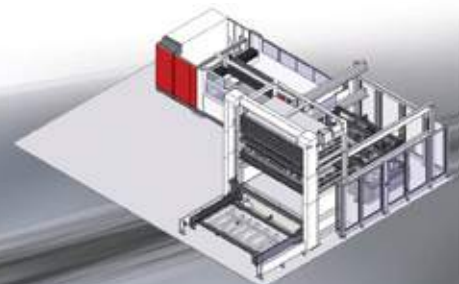
- Add a second laser to maximize productivity. A two laser FMS system allows up to six product carts for total capacity of 66,000 lbs. Compatible with NX and LVP models.
- Heavy duty with up to 1 inch full sheet load and unload capacity
- Full load/unload cycle time in approximately 65 seconds
- 11,000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



Auto-FlexMS HP 2Laser

### NEW FSC COMPACT SYSTEM

- Completely modular and expandable
- Lightning-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



## Processing Machine Specifications

Model Name		3015 eXs		
Machine structure		X/Y - Precision Rack & Pinion - Z=Precision Ball Screw		
Travel drive method		X-Y-Z simultaneous 3 axes (Z axis height control is also possible)		
Specifications and Performance	Max. workpiece size (inch)	120.1 x 60.0 (3050mm x 1525mm)		
	Table pass height	34.6 (879mm)		
	Processing access	Automatic Up/Down Door		
	Pallet changer	Provided		
	Stroke	X-axis stroke (inch)	122 (3,100 mm)	
		Y-axis stroke (inch)	61 (1,550 mm)	
		Z-axis stroke (inch)	5.9 (150 mm)	
	Speed	Rapid travel speed (X, Y) (inch / min)	3940 (100m/min) 5550 (141m/min) simultaneous	
		Max. processing feedrate (inch / min)	1970 (50m/min)	
	Precision	Positioning precision (inch)	0.0019/20 (0.05/ 500mm) (X, Y axis), 0.0039/4 (0.01/ 100mm) (Z axis)	
Drive motor type		Intelligent AC Servo		
Max. workpiece weight (lb)	1540 (700 kg)			
Machine unit dimensions (W x H x D) (inch)	428.6 x 93.7 x 127.8 (CFR) (10,886 x 2,380 x 3,246 mm)		428.6 x 94.9 x 127.8 (60XF) (10,886 x 2,410 x 3,246 mm)	
Machine system weight (lb)	28090 (12740 kg)			
Machine power requirements	49 KVA 3Ø 208 VAC ±5% 60Hz 141 Full Load Amps			

## Control System Specifications

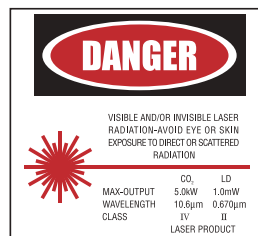
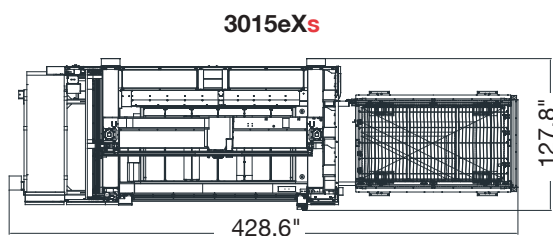
Type	Self-contained
CPU	64-bit
Display screen	15" TFT color LCD Touch screen
Hard disk	20.0GB
Generator output control	Output Power, Frequency, Duty
Generator operation control	Beam ON/OFF, laser gas change, etc.
Drive system	X, Y, Z simultaneous control
Position detection system	Encoder
Min. command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

## Pallet Changer Specifications

Type	P7
Drive mechanism	Chain
Pallet change time (sec)	Approx. 40
Work clamps	2 sets on Y axis
Pallet capacity (lb)	1540/pallet (700 kg)
Pallet changer weight (lb)	4500 (2,040 kg)
Applicable machine size	3015 (5' x 10') (1,525 x 3,050 mm)

## CO<sub>2</sub> Laser Specifications

Excitation method		3-axis cross flow, SD (silent discharge) excitation	
Ability	Laser Output	Frequency (Hz)	10~3,000 (Guaranteed range during power control: 100~3,000)
		Duty (%)	Settable range: 0~100
		Rated output (W)	2700
		Stability (%)	Below±1 during power control (compared to rated output)
		Settable power range (%)	0~100(Guaranteed range: 10~100, Rated output:100)
Beam characteristics	Wavelength (µm)	10.6	
	Beam mode	Low-order (TEM <sub>01</sub> * Main component)	
	Beam diameter (mm)	Approx. ø21 (rated output)	
	Divergence angle (mrad)	Approx. 2.5 (total angle)	
Laser Gas	Composition	CO <sub>2</sub> :CO:N <sub>2</sub> :He=8.4:60:28	
	Consumption (L/hr) (standard)	Approx. 1	
	Gas sealing time (hr)	24	
	Dimensions: (W x D x H) (in)	80.3 x 17.7 x 63.8	
	Weight (lb)	Approx. 1,200	
Chiller Power Requirements		28 KVA 3Ø 208 VAC 15% 60Hz 82 Full Load Amps	



This product complies with CFR 1040. 10.  
Data provided in this brochure is for reference only.

### MC MACHINERY SYSTEMS, INC.