

# *HVII Series*

## Product Brochure

Hybrid Laser Processing Systems



# HVII

## THE MITSUBISHI HVII . . . PERFECTLY PRODUCTIVE

The **HVII** continues the tradition of our legendary hybrid series. A workhorse equipped with state-of-the-art technology, it's also one of the easiest to use. The **HVII** series meets the demand and needs of users, and brings unsurpassed performance at the lowest cost of ownership of any machine in its class.

### IMPROVED PROCESSING PERFORMANCE

- Advances in processing technology optimize gas flow and beam quality while allowing for exceptional plate processing performance
- Mitsubishi's pioneering Super HP control redefines a hybrid's ability to produce accurate parts in thin, high-speed cutting applications
- DR control combines real-time power ramping with acceleration or deceleration – dramatically reducing dross adhesion and thermal influences

### MELS EYE OPTION

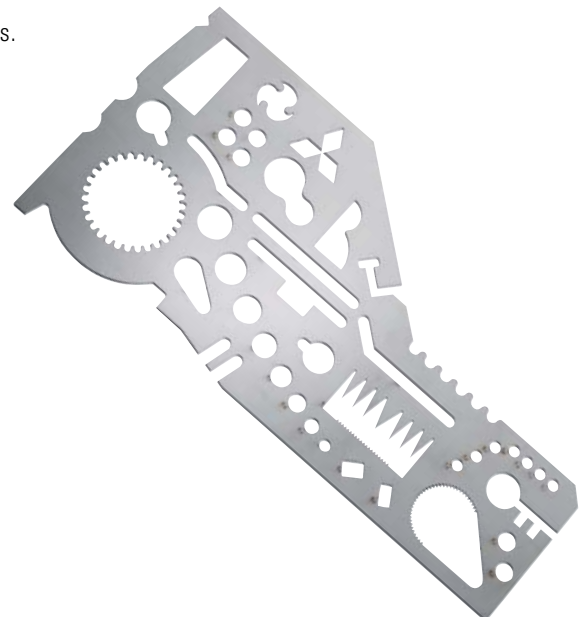
- **Plasma Detection** - detects plasma generated during processing with nitrogen. It senses when too much plasma is present and adjusts speed, enabling continuous processing
- **Pierce detection** - conventional piercing is detected in midrange thickness plates. Compared to previous timer-style piercing control stable piercing is enabled
- **Auto-focus** - with the auto focus preset head, the processing machine automatically finds zero focus.
- **Burn Detection** - is effective while piercing or cutting with oxygen assist gas. When burning is detected, operation will suspend and nozzle cleaning will automatically be implemented to continue processing.

### ENHANCED PRODUCTIVITY

- Reduced setup times
- Processing versatility for thin or thick work piece applications
- Reduced de-burring of sheet metal applications
- Intelligent Assist Gas Monitoring, resulting in less scrapped parts
- Automatic Quick-Assist Gas Change function
- Expanded part processing area reduces deadzone from clamping.

### COST-EFFECTIVE OPERATION

- Optimal nozzle design reduces running costs
- Long-life part-design for drive system and other components
- Revolutionary "Dual" Cross-Flow resonator (40 CF-R)
- Integrated Maintenance Guide for most maintenance functions





**NEW LC30BV MITSUBISHI CONTROL**

- New LC30BV Mitsubishi Control simplifies cutting setup and preparation
- A complete database of processing conditions applicable to a wide variety of cutting
- High speed z axis height sensing and latest pierce technology drastically reduce cutting time



- 15" Touch Screen Control
- 1.2GHz, 20GB hard drive
- USB port, Ethernet
- New Interface
- High Speed Graphics
- Help Screens



**PROVEN PERFORMANCE**

Mitsubishi is the single-source engineering force behind every component of a Mitsubishi Laser System – delivering superior reliability, stability and performance. With more than 1,500 machines located throughout North America, not one Mitsubishi Laser resonator has ever needed to be replaced, eliminating a costly repair encountered with other machines throughout the industry.

## ABANDON ONE-STEP-AT-A-TIME PROCESSES WITH AUTOMATED SOLUTIONS FROM MITSUBISHI

On the new HVIIIP model, Mitsubishi adds a pallet changer to the HVII machine, increasing operator productivity by optimizing cutting time. The pallet changer provides two processing tables that can be interchanged into the processing area, decreasing downtime between cutting.



## CUSTOMIZE TO FIT YOUR NEEDS WITH THESE OPTIONS



### **Static-type Automatic Focus Preset Processing Head:**

NC-commands exercise automatic control over focal position, eliminating the need to manually adjust the processing lens upon changes in the material being processed.



### **Enhanced processing capability for the 40CF-R resonator:**

Adapting the f254mm (f10.0") focal length lens has improved stainless steel non-oxidized cutting capability, quality and stability. This option increases the stability of processing thick materials.



### **Chip Conveyor:**

Carries chips falling from processing table outside of the processing machine, improving chip disposal efficiency during continuous operation.



### **NC Turntable:**

Add another axis, the 4 jaw chuck allows for round or square pipe processing.



### **Contact Height Sensor:**

Simple contact type height sensor enables the processing of non-metal materials such as plastics and woods.

# RESONATORS

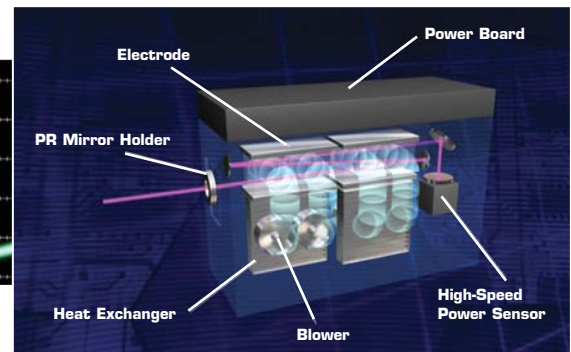
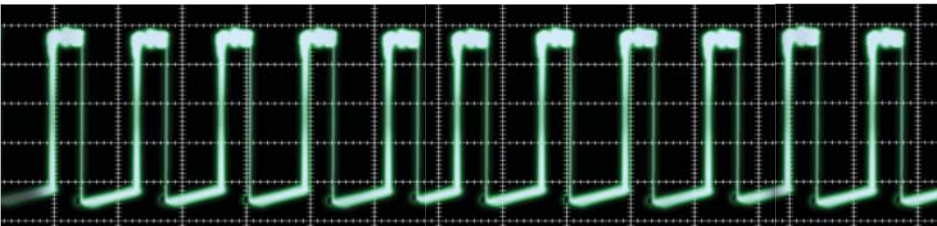
## Lowest cost of ownership

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 EXCLUSIVE X-FLOW R SERIES RESONATOR

- 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  
2KW Consumes only 1 Liter of Laser gas per hour.
- Extended maintenance intervals equal less maintenance
- Improved power supply provides high efficiency, stability, reliability and lower maintenance
- Fast startup – ready to cut at full power only 45 seconds after power on
- Designed and manufactured exclusively by Mitsubishi
- 2.0, 3.0 or 4.0kW resonators available
- Enhanced rectangular wave pulse



## MITSUBISHI'S SUPERIOR “CUTTING POWER”

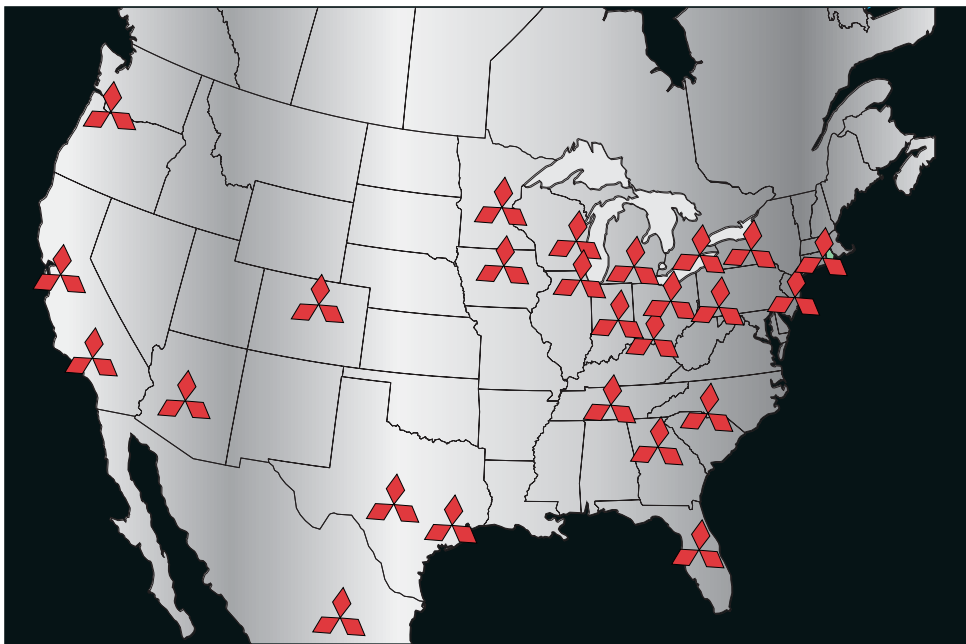
Output power alone does not define cutting performance or cut edge quality. It takes superior “cutting power” to achieve high-performance results. Cutting power is optimized by creating the perfect blend of output power, beam quality, beam stability and power control. The results are visible through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

## THE INDUSTRY'S MOST RESPONSIVE SERVICE AND SUPPORT

When you choose a Press Brake from MC Machinery Systems, Inc., you get industry-leading technology for peak bending performance - but that's just the beginning.

Long before your purchase, you'll know the difference the Mitsubishi Experience can make. Our field service managers and applications engineers have technical expertise and industry-specific knowledge, combined with MC Machinery's wide array of machine tools and modular automation options. This potent combination gives the flexibility to deliver a custom system designed to make your business its most efficient and competitive.

From installation and on-site training to support and service to keep you running at peak performance throughout the life of your system, our national service network is just a phone call away. No other company has greater depth of experience and resources than Mitsubishi and MC Machinery Systems Inc.



# FABRICATION PRODUCT LINE

## PRESS BRAKE



Diamond Ultra Series



Diamond Elite Series



Diamond Smart Series



BE Series



BH Series



## LASER



LVPlus Series



VZ Series



NX Series



HV Series



Automation: MCSIII



## WATERJET



DX 44s



DX 510



DX 612



| Item  |  | Specifications  |  |
|---|--|---|--|
| Model name                                    |  | 2512HVII  | 3015HVII                                     |
| Movement method                               |  | Hybrid type (X axis = table movement; Y axis = beam movement)                                 |  |
| Control method                                |  | X-Y-Z simultaneous 3-axis control (Z axis height control also possible)                       |  |
| Target workpiece dimensions <sup>1</sup> (mm) |  | 96.06 x 48.03 (2440 x 1220 mm)  | 120.05 x 60.04 (3050 x 1525 mm)              |
| Work Table Height (mm)                        |  | 33.5" (850 mm)  |  |
| Stroke  | X axis <sup>2</sup> (mm)                 | 98.42 (2500 mm)   | 122.04 (3100 mm)                             |
|   | Y axis (mm)                              | 49.2 (1250 mm)  | 61.02 (1550 mm)                              |
|   | Z axis (mm)                              | 11.8 (300 mm)   |  |
| Speed   | Rapid feed rate (in./min) X,Y            | Maximum 1968 (100%, arbitrary, 10% 3-step setup)<br>(Arbitrary: Setting from 0-100% possible) |  |
|   | Rapid Seed Z axis (m/min)                | 2560 (65m/min)  |  |
|   | Processing feed rate (in./min)           | 1181 (30m/min)  |  |
| Accuracy                                      | Positioning accuracy <sup>3</sup> (mm)   | 0.00039/20 (X, Y axis), .0039/4 (Z axis)  |  |
|   | Repeatability accuracy <sup>3</sup> (mm) | ±0.00019 (X, Y axes)  |  |
| Drive Motor Type                              |  | AC Servo  |  |
| Max workpiece weight with 40 CF-R (lb)        |  | 1320 (600 kg)   | 2050lb 930kg (with 40CF-R)                   |
| Machine unit Dimensions (W x H x D)           |  | 246.3 x 87.7 x 108.6 (6255 x 2230 x 2758 mm)  | 323.0 x 87.7 x 120.8 (8200 x 2230 x 3058 mm) |
| Applicable resonator                          |  | 20CF3 • 30CF-R • 40CF-R   |  |
| Machine System Weight (1lb)                   |  | 19400 (20CF3) 21605 (40CF-R)  | 23810 (20CF3) 26018 (40CF-R)                 |

\*1: Target workpiece dimensions indicate work lifter capacity. Processing ability will vary by the resonator selected.

\*2: Processing sphere is the stroke figure without parentheses. "(+5.90)" is possible only for work conveyance and maintenance use.

\*3: Accuracy values indicate processing machine mechanical accuracy, and differ from cut workpiece accuracy (processing accuracy). Processing accuracy will vary by materials, plate thickness, processing speed and other factors.

### 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    |

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

| Model                                    |                                       | 20CF3   | 30CF-R  | 40CF-R   |  |
|--|---------------------------------------|---|---|--|--|
| Excitation method                        |                                       | 3-axis cross flow, silent-discharge                 |   |  |  |
| Performance                              | Laser power                           | Maximum output power (W)                            | 2000  | 3000   |  |
|  |                                       | Rated output power (W)                              | 2000  | 3000   |  |
|  | Control method                        |   | Power feedback                                |  |  |
|  | Power stability                       |   | Less than ±1% of rated power                  |  |  |
|  | Beam characteristics                  | Beam mode   | Low-order (main component TEM <sub>00</sub> ) |  |  |
| Beam outer diameter (inch)               |                                       | 0.83  | 1.02  |  |  |
| Beam divergence (mrad)                   |                                       | Approx. 2.5 or less (total angle)                   |   | Approx. 3.5 or less (total angle)                    |  |
| Laser gas                                | Laser gas composition                 | CO <sub>2</sub> :CO:N:He                            |   |  |  |
|  | Laser gas consumption rate (liter/Hr) | 1   | 3   |  |  |
| Gas sealing time (Hr)                    |                                       | 24 (during rated continuous oscillation)            |   |  |  |
| Wave length (µm)                         |                                       | 10.6  |   |  |  |
| Frequency setting range (Hz)             |                                       | 10~3000   |   |  |  |
| Duty range (%)                           |                                       | 0~100 adjustable                                    |   |  |  |
| Output power adjustable range (%)        |                                       | 0~100 of rating                                     |   |  |  |
| Resonator unit dimensions (W x H x D in) |                                       | 80.3 x 63.7 x 19.9                                  | 98.4 x 71.3 x 31.5                            |  |  |
|  |                                       | (mm)  |   | 2040 x 1620 x 450                                    |  |
| Resonator unit weight (lb)               |                                       | 2650 (1200 kg)                                      | 4850 (2200 kg)                                |  |  |
| Chiller power requirements               |                                       | 24 KVA<br>3Ø 208 VAC ±10% 60Hz<br>65 Full Load Amps |   | 42 KVA<br>3Ø 208 VAC ±10% 60Hz<br>129 Full Load Amps |  |



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