



**FAST Laser
LH2100**

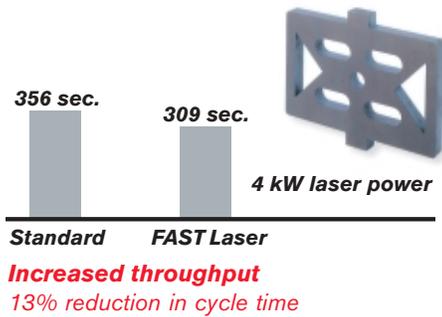
Hypertherm®

FAST Laser™ Cutting Heads and Controllers

Hypertherm FAST Laser cutting heads and controllers

The new performance leader in plate laser cutting technology

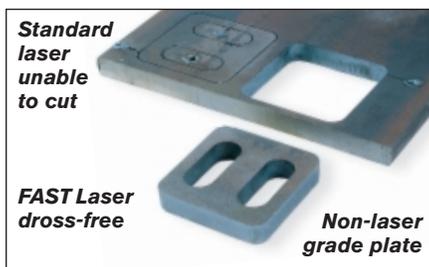
Hypertherm's patent-pending laser process technology breakthrough – aptly named *FAST Laser* (Flow Accelerated Screen Technology™) – significantly improves the speed, the capacity and quality range, and combined productivity of plate laser cutting. Whether you're a high-volume fabricator driven to increase productivity and unattended-operation opportunities with a dedicated 4 to 6 kW plate laser, or a job shop seeking to expand the range and cost performance of a 2 to 3 kW laser, an integrated or retrofitted *FAST Laser* LH-series™ cutting head and *Mariner*™ controller will significantly enhance your capability and bottom line.



Minimum 10% increase in cut speed on mild steel

Increased assist-gas pressures in the cut zone, without the traditional loss of cut quality (see the illustrations on the opposite page), produces speed improvements on mild steel plate – $\frac{3}{8}$ to 1 inch (10 to 25 mm) – consistently exceeding 10%, dross-free without self-burning.

- Increased laser cutting throughput
- Decreased operating and per-part costs
- Accelerated investment payback



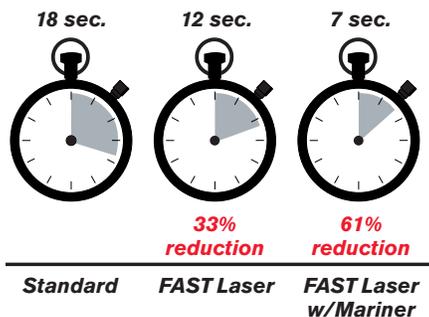
Expand cut capacity and quality range

The higher gas pressures of the *FAST Laser* process also reduce laser cutting sensitivity to plate quality variations, power fluctuations, and gas pressure changes.

- Increased robustness
- Expanded plate capacity and grade potential; reduced cost
- Improved quality consistency and reduced reject rates

Expanded plate capacity

A36 $\frac{3}{4}$ " (19 mm)



Increase productive time and reduce waste

Higher gas velocity allows more rapid piercing, and the optional *Mariner* controller optimizes system performance. The *Mariner's* built-in software coupled with the integrated monitoring features of the *FAST Laser* cutting head, reduce total cycle time and maximize utilization of the laser's capabilities.

- Faster pierce times with Dynamic Pierce Control™ (DPC)
- Reduced fault rates and downtime with advanced fault detection
- Increased opportunity for unattended operation

Reduced pierce time

$\frac{3}{4}$ " (19 mm) mild steel

The bottom line – savings:

Based on a typical operation:

- 11 nests per day,
- 2 shifts per day,
- 5 days a week, and a
- 70% utilization factor

and typical *FAST Laser* benefits:

- 10% reduced cycle time,
- 4% reduction in plate cost

You can:

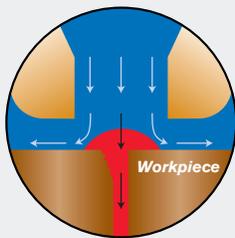
- Reduce your operating costs 4%
- Increase your output 9%
- Reduce per-part costs 4%

FAST Laser delivers optimal gas flow directly to the cut zone – consistently matching beam width and flow geometry.

With standard CO₂ lasers, cut speed has always been limited by the need to balance assist-gas pressure against cut quality. Lower pressures can improve quality but sacrifice speed, thickness capability, and dross-free cutting. Higher pressures often create stagnant zones of gas on the surface, inducing uncontrolled burning of the steel.

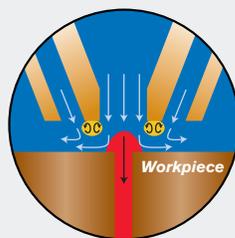
FAST Laser technology allows the laser beam to define the geometry of the gas flow precisely. An exclusive, patent-pending, nozzle-embedded screen allows accelerated high-velocity gas flows along the beam path. At the same time, a reduced outer flow protects the high-velocity jet from external contamination and helps remove molten material.

Standard technology



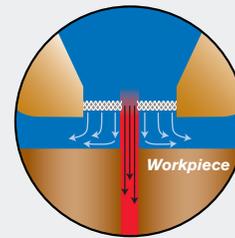
Conventional nozzles create a large stagnant zone of gas on the plate surface, inducing uncontrolled burning.

Shielded technology



Shielded nozzles allow two flow regions, but the primary jet still stagnates on the plate surface.

FAST Laser technology



FAST Laser nozzle technology allows the laser beam to define the flow geometry precisely, eliminating the stagnant zone.

Hypertherm FAST Laser LH-series heads and Mariner controllers deliver the value and versatility today's fabricators demand.

Hypertherm LH-series heads make laser cutting systems more capable

- Pierce and cut-sensing fiber optics for increased monitoring capabilities
- Pre-centered optics facilitate quick, precise lens changes
- Quick lens change allows fast, "no-tools-required" optics replacement
- Integrated servo-controlled lens axis delivers precise lens adjustment
- Quick focal length change decreases set-up for plate changes
- Water cooling of head for longer nozzle life
- Integrated anti-splatter delivery eliminates need for external applicator
- Optional magnetic breakaway mount protects cutting head from terminal impacts

LH-series heads can be coupled with the Mariner CNC controller for peak system performance

- Dynamic pierce control for quicker cut initiation
- Cut-error monitoring to detect and record common cutting faults
- Programmable gas flow delivers shorter cycle times for pressure changes
- Intelligent cutting algorithms improve overall system robustness
- Minimal operator involvement lowers labor costs and reduces set-up errors



**Mariner
CNC controller**

Hypertherm FAST Laser products

Features

Hypertherm LH FAST Laser cutting head features

FAST Laser technology	X
Pierce sensing	Integrated
Process sensing	Integrated
Pre-centered optics	X
Quick lens-change	X
Servo-controlled lens axis	X
Quick focal-length change	X
Water cooling of head	X
Gas cooling of lens	X
Integrated anti-splatter delivery	X
Magnetic breakaway mount	Optional
All connections free of cut zone	X

Specifications

LH2125/LH2100 laser cutting heads

	LH2100	LH2125
Focal length		
7.5 inches	X	X
10.0 inches	X	X
12.5 inches		X
2-inch diameter	X	X
Clear aperture	45.7 mm	45.7 mm
Lens adjustment	± 3 mm	± 3 mm
Lens stroke	25 mm	25 mm
Maximum lens speed	73 mm/sec	73 mm/sec
Maximum pressure	28.6 bar	28.6 bar
Mass	7.7 kg	9.1 kg
Height	340 mm (13.4")	406 mm (15.9")
Width	220 mm (8.7")	220 mm (8.7")
Depth	114 mm (4.5")	114 mm (4.5")

Mariner CNC laser controller

Processor	Pentium P4 at 2.2 GHz
Memory	512 megabytes of RAM
Hard drive	60 gigabyte hard drive
Screen	15" active matrix color LCD with touch screen
Disk drive	1.44 megabyte floppy drive (internal), DVD CD Rom drive (internal)
Keyboard	PC style and keyboard for alpha-numeric input
Communication	RS232/RS422, Ethernet
I/O	SERCOS-RECO I/O distributed expansion module. (2) Feedrate potentiometers, integrated station select switches, and manual motion joystick.
RFI/EMI shielding	Complete Opto-Isolation; grounding
Supportable axis	SERCOS fiber optic drive interface
Dimensions	Height 32.4" (822 mm), Width 26.3" (668 mm), Depth 23.0" (584 mm)
Weight	110 lbs (41 kg)
Operating environment	0 to 50°C; 95% relative humidity (non condensing). Optional chiller/cooler
Power	Universal power input
Operating system	Windows XP

Hypertherm, FAST Laser, LH, Flow Accelerated Screen Technology, Dynamic Pierce Control (DPC) and Mariner are trademarks of Hypertherm, Inc. and may be registered in the United States and/or other countries.

Hypertherm®

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