Controlled Automation MultiMAX

PLATE CUTTING MACHINE

Controlled Automation
501-557-5109 • www.controlledautomation.com • sales@controlledautomation.com

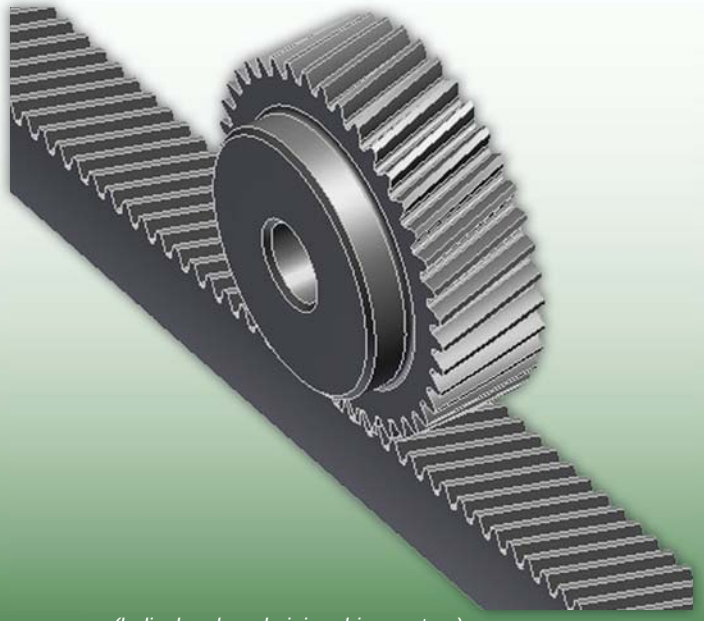
MultiMAX

The MultiMAX uses Controlled Automation's shape cutting technology to produce top quality thermally cut parts. With a core machine design of strength and stability, fast and responsive controls, along with the advantage of oxy-fuel and high definition plasma, precision parts are created quickly and easily. The MultiMAX has many options to fit your specific needs. You can outfit your machine with up to 8 oxy-fuel torches, 4 plasma cutters and 4 part marking tools. This machine can be customized to fit your exact requirements, with positioning features such as variable travel lengths, widths, service track positions and material handling options.

(Shown with optional photo-eye safety perimeter and shuttle table cutting surface with downdraft)

Bridge Design

The machine structural design consists of a rigid weldment with tubular steel main members. The main members are fitted together to optimize strength, rigidity and stability while the machine is in motion. Each bridge is designed to meet your exact specifications. The MultiMAX can be built with the controller on either side of the gantry depending on shop layout and machine location. Our cutting tool carriage drive system uses a brushless AC servo motor, precision planetary gear reducer, and heavy duty rack and pinion drive assembly. An *(optional)* band drive assembly is used to drive any additional carriages. The *(optional)* band assembly allows multiple tool carriages to be spaced apart at desired intervals to accomplish such tasks such as rip cutting raw material into bars, cutting identical nests simultaneously, or placing one oxy-fuel torch vertically and another beside it on the same path at a desired bevel to produce parts with a weld-prepped edge.



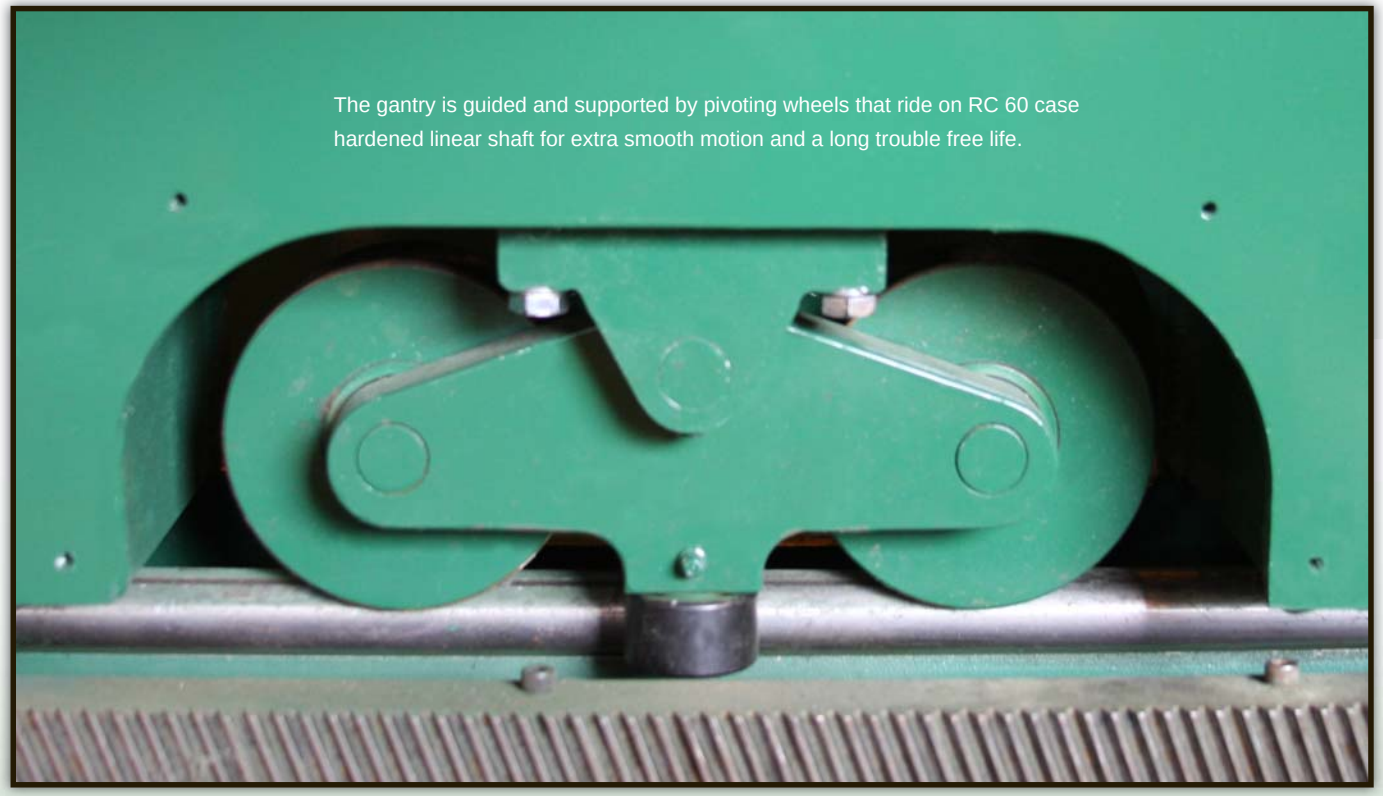
(helical rack and pinion drive system)

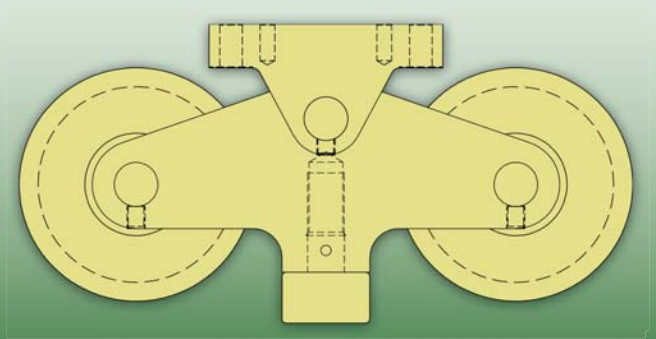
(low backlash planetary gear reducer)

Bridge Drive System

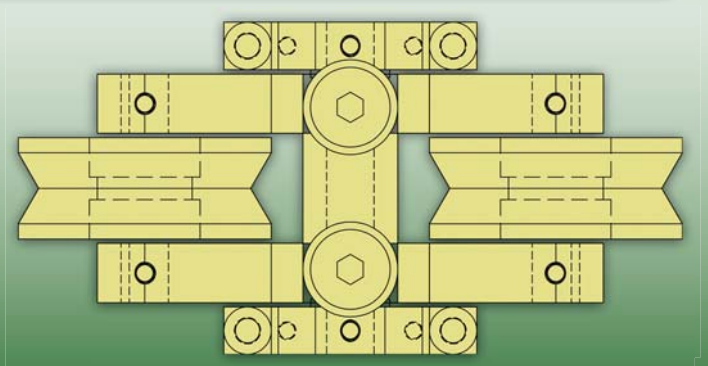
The bridge is driven along the rail system length by use of dual AC Servo motors *(one on each side)* coupled to low backlash planetary gear reducers. We use some of the highest quality gear reducers on the market to reduce backlash when changing directions and to ensure a very long dependible lifespan. The planetary system produces extreme power and performance in a very small package. Helical rack and pinions are used to reduce cogging and vibration that are typical when using straight rack and pinions. When combined in a system, AC servo motors and helical rack and pinion provide smooth motion and high acceleration rates, producing optimum plasma and oxy-fuel accuracy and cut quality.

AC servo motor





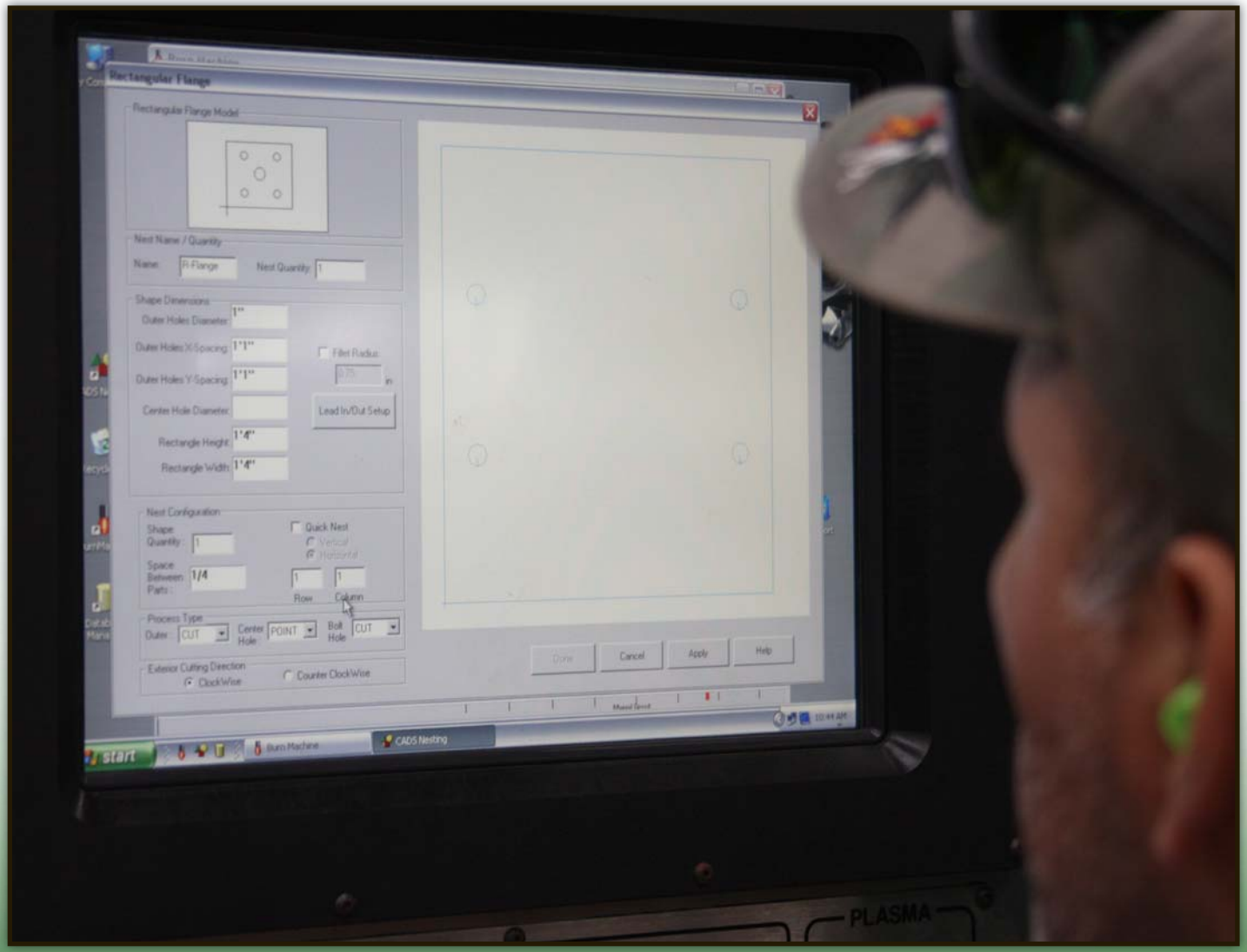
(profile view)



(bottom side view)

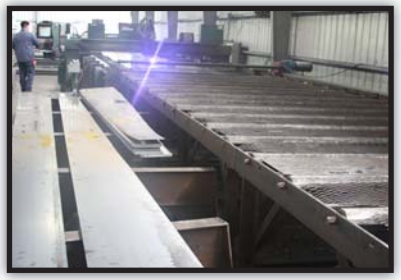
Guide Rails and Wheels

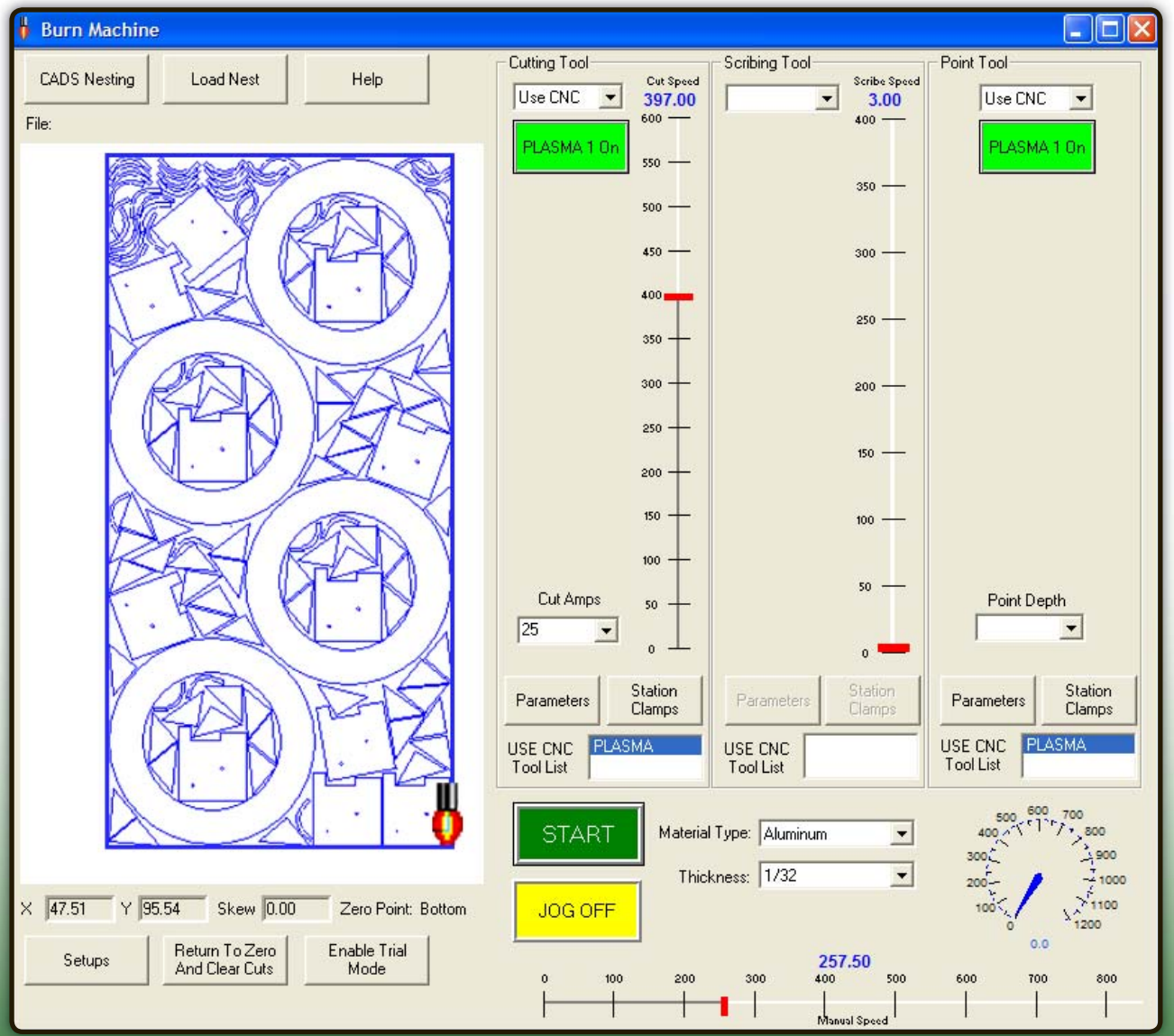
The bridge is supported by four pivoting wheel assemblies. Each pivoting wheel assembly houses two hardened support wheels for a total of eight wheel supports. By supporting the gantry with eight wheels in contact with the rail surface instead of four, the lives of the wheels, support rail, and wheel bearings are doubled. The wheel assemblies on the guide side are “V” groove wheels which guide the machine on the same path as the guide side rail rolling surface. The wheel assemblies on the opposite side of the gantry are flat across the wheel face. This allows for thermal expansion and compliance between the machine and the rail system interfaced. The rail rolling surfaces are hardened and ground round shafting running the length of each rail providing a very durable long lasting support for the bridge. Another advantage of the MultiMAX rail system is that the round shafting allows debris to fall away from the rolling surface.



User Interface

The MultiMAX control system has an easy to use interface. This Machine comes standard with a 15” display and Windows XP operating system. The controller can be networked to office computers for downloading parts or nests or importing files produced by most drafting and design packages.





Machine Operation

The operation of the machine is designed to be user friendly. The MultiMAX operating software provides a variety of ways to program or import parts or a nested plate of multiple parts. Parts can be created manually on the machine, imported from multiple file formats *(CNC, DXF, DSTV, etc..)* produced in drafting and design programs or selected from the shape library that is provided with the machine control software. After the parts are created or retrieved, they can be nested using our very own automatic nesting package.

During machine operation, the operator screen shows the part or nest being processed, along with a real time trace of the progress of the cutting tool.

At any point during machine operation, the operator is able to halt the machine. This allows the operator to check parts, make adjustments to the tooling, change consumables or move to process a different part in the nest. The part run can then be returned to the point it was initially halted to complete the remainder of the part or nest.

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Plasma System

For the ultimate in plasma cutting, the MultiMAX can be equipped with Hypertherm's HPR260 high definition plasma as its primary plasma cutting tool. This system can operate over a wide range of amperage settings (30 amp, 80 amp, 130 amp, 200 amp, and 260 amp). The HPR260 system can cut material from .018" thick all the way through 2-1/2" thick and will produce exceptional part edge quality. This plasma cutting system will produce a smooth part edge finish and dross free cut paths while steadily cutting at high speeds. Other plasma systems are available upon request to meet your exact needs.

Optional features

The MultiMAX can be equipped to handle more than one plasma torch, in fact up to four plasma heads can be used on the MultiMAX. Plasma heads can be used for different amperages, one for exterior cutting and one for interior cutting, or cut multiple parts simultaneously.

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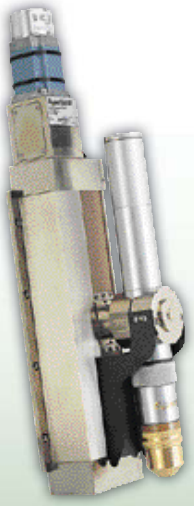
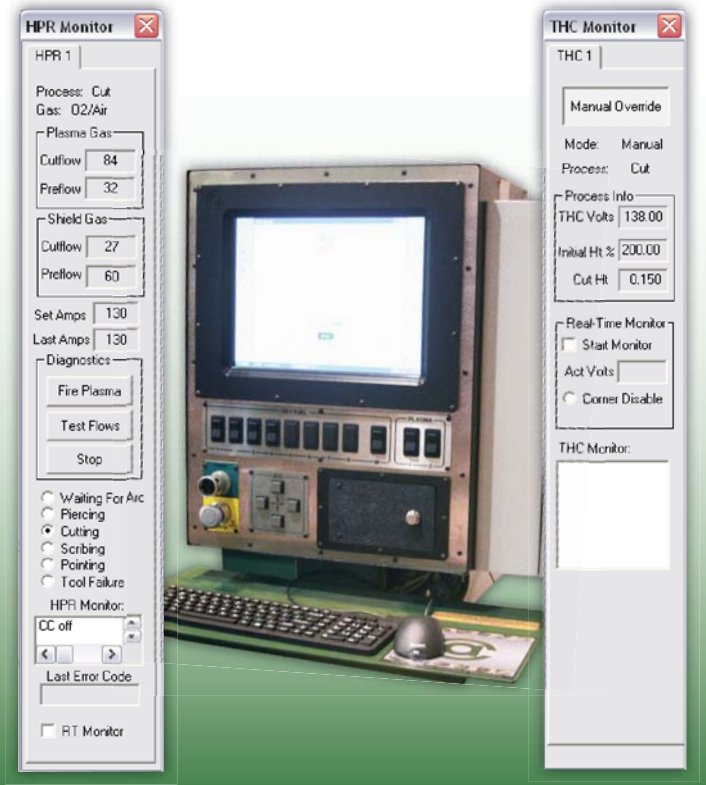


Command THC

The Command THC, supplied by Hypertherm, is a microprocessor-based torch height control system which accurately sets the initial piercing height and controls the torch-to-work distance of a plasma torch during cutting operations. The system includes a control module, plasma system interface module, a torch lifter assembly, interconnecting cables, and a tool mount with collision detection.



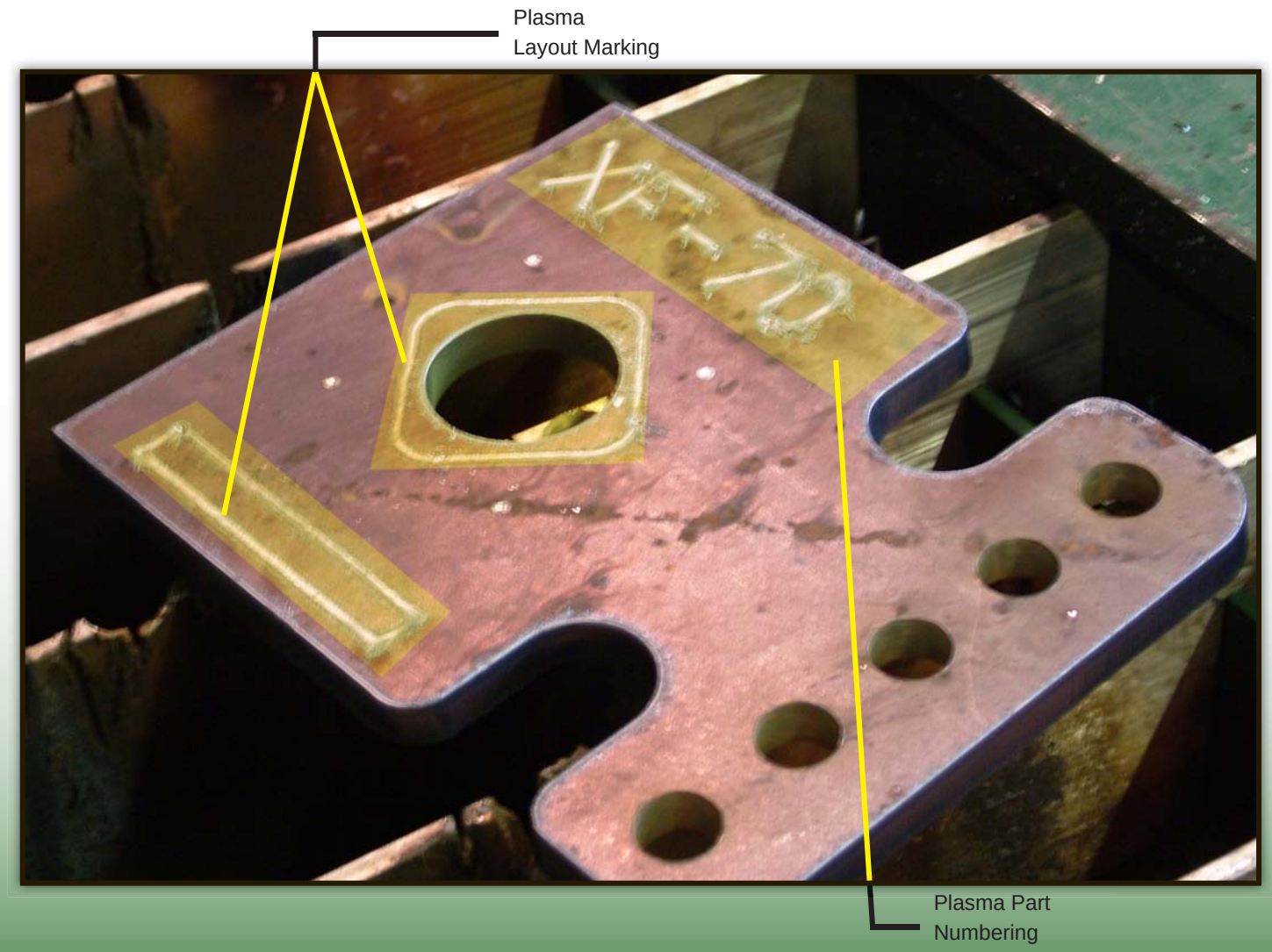
Interface to the Controlled Automation controller

Both the plasma automatic gas control and the THC are interfaced to the Controlled Automation controller through an RS-422 port. The operator only has to select the material type, material thickness and the amperage. All the other dependent parameters are set automatically. This is comprehensive of the plasma, scribe, and point processes.

Plasma Automatic Gas Control

(optional)

The plasma automatic gas control, supplied by Hypertherm, sets, monitors and controls gas flows and pressures close to the torch for improved process consistency. The automatic gas control provides rapid switching from one gas process to another. This is common when switching from the cutting process to the marking process.



Part Marking

Part marking is accomplished by using a lower amperage setting in a plasma system. A dedicated ArcWriter can be used for marking or the HPR260 with automatic gas control *option* can switch directly from the cutting process to marking. This will eliminate the concerns of tool offsets or consumable changes. When the HPR260 with automatic gas control is used, the Controlled Automation software communicates with the plasma automatic gas control system to adjust the gas flows, gas pressures, and the amperage setting on the plasma.

Hypertherm® ArcWriter

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Oxy-fuel AutoGas

The *optional* oxy-fuel autogas system automatically sets the gas pressures depending on the plate thickness and the torch tip being used. The automatic oxy-fuel gas pressure control system continually monitors the delivery pressures to the tool. Set-point information for the oxy-fuel AutoGas controller is stored in the machine control database. This information is used to adjust all pressures delivered to the cutting tool. A precision pressure transducer at each gas control regulator monitors the pressures for continuous real-time adjustments by the controller. With this continual monitoring system, pressures can be manipulated throughout the preheat and cutting cycle. This process includes setting high preheat pressures during the preheat phase before the cut. Lowering pressure settings for the preheat conserves fuel and oxygen during the cut cycle improving edge quality. Ramping the preheat pressures at an equal and steady rate over time eliminates the risk of flame instability or blowout during the change. Setting the desired cutting oxygen pressure, and ramping cutting oxygen pressure over time during piercing prevents molten blowback. These features are controlled and monitored to ensure repeatable part edge quality and cutting performance.

Oil/Water/Air Separator

The shop air cleaning system purpose is to filter oils, moisture, and debris from the shop's air supply. This system includes a mainline prefilter, then a refrigerated dryer, and finally a downstream micro mist separator. The separators are equipped with an internal automatic drain and a differential pressure indicator. Removing the water and oil from the air supply ensures the best possible performance of all pneumatic components, as well as ensuring the best possible cut quality and consumable life when using air as a plasma gas.

Oxy-Fuel

The MultiMAX can be supplied with up to 8 oxy-fuel stations for high volume cutting of thick plate. All oxy-fuel systems include a machine gas service electric supply valve assembly, service hoses to the machine, automatic closed loop gas pressure control *(optional)*, control valves at each station, totally enclosed lifter, automatic torch ignition system, a cutting torch assembly, swivel mounted tool holders and of course, software to perform the system control. Each oxy-fuel torch is equiped with our unique dual-bubble level indicator. This allows the operator to easily square the torch to the plate.

(dual-bubble level indicator)

Bridge Service Track

The MultiMAX comes standard with machine service wire and hose flex track. This flex track can be located on either side of the machine. If the track is located on the operator side of the machine, it is mounted overhead for safety precautions. The flex track is a steel/aluminum composition for systems up to 63' in travel length. Any system that requires a travel length longer than 63' has a track composed of self supporting, glide-type industrial plastic *(shown below)*.

Service Panel

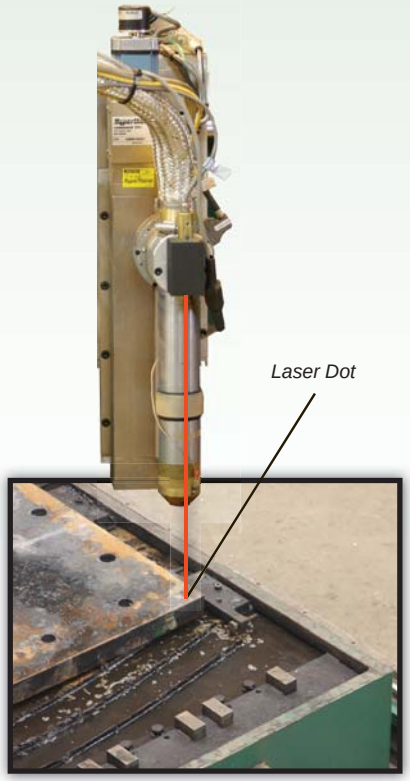
The MultiMAX comes standard with a machine electrical distribution service panel. The purpose of the service panel is to distribute the appropriate voltage to the electrical components of the machine, and to ensure clean, controlled and protected circuits. Controlled Automation supplies the drive isolation transformer, constant voltage regulator, control voltage transformer and fused disconnects for the machine and plasma system.

(electrical distribution service panel)

(Optional Overhead track mount system)

Laser Dot

The laser dot is used to help the operator align the tools to the plate by supplying visual feedback *(a red laser dot)* on the material. This is very helpful when the operator is skewing a plate with parts nested very close to the edge of the material, or determining if a part will fit on a remnant. The laser dot can also be used to trace a remnant for nesting.



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(shown with conveyorized water table cutting surface)

Cutting Surfaces

Controlled automation offers many types of material cutting surfaces to compliment your MultiMAX machine. These optional cutting surfaces range from water tables, converyorized tables, shuttle tables, downdraft tables, self-cleaning tables and up to custom designed integrated systems. The work surface and material handling may be supplied by Controlled Automation, manufactured by the customer using drawings supplied by Controlled Automation or an existing cutting surface may be used.

MultiMAX system

Requirements

Electrical requirement	
	208 VAC 3 phase @ 65 FLA, 60 Hz
	240 VAC 3 phase @ 58 FLA, 60 Hz
	380 VAC 3 phase @ 37 FLA, 60 Hz
	480 VAC 3 phase @ 29 FLA, 60 Hz
	600 VAC 3 phase @ 23 FLA, 60 Hz

(All electrical and plumbing installation must meet state and local codes.)

Gantry

Rigidly constructed tubular steel gantry	
Approximate fully loaded gantry weight	5200 lbs, depending on gantry length

Gantry drive system

Dual AC servo	
Low backlash planetary gear reducers	
Helical rack & pinion	
Maximum travel speed	750”/min
Crash detection *optional* on all cutting & marking tools purchased	

Carriage drive system

AC Servo	
Low backlash planetary gear reducer	
Rack & pinion	
Maximum travel speed	750”/min
Material width capacity	5’ to 20’

Rail system

Modules	10’
Maximum travel length	123’
Floor mounting/anchor pads every 3’ approximately	
Hardened rolling surface	
Wiring and plumbing through cable carrier provided	

(All specifications are subject to change without notice)

Oxy-fuel system

Customer to specify desired oxy-fuel torch brand	
Automatic gas pressure control , or manual *option*	
Oxy-fuel torch assembly	
Emergency shut-off assembly	
Air dryer/moisture/oil separator for automatic, *optional otherwise*	
Maximum material thickness	6” piercing start
Automatic striker/pilot flame system	
Air requirement	120 psi @ 1 scfm
	99.9% clean, dry & oil free
Oxygen requirement	120 psi @ 655 scfh *(per torch)*
Fuel gas requirement	15 psi @ 65 scfh (per torch)

Plasma system

Supplier	Hypertherm
Model	HPR260 with automatic gas control
Cutting amperage range	30 - 260 amps
Torch height control	Command THC
Integrated marking	12 - 20 amps
Serial interface	RS-422 serial interface supplied
Material capacities	.018” thick thru 2-1/2” thick
Maximum piercing thickness recommended	1-1/4” thick
Air requirement	120 psi @ 2.5 scfm
	99.5% clean, dry & oil free (bottle recommended)
Oxygen requirement	120 psi @ 4.2 scfm
	99.5% pure oxygen (liquid recommended)
200/208 VAC 3 phase @ 149/144 50/60 Hz240 VAC 3 phase @ 124, 60 Hz	
380 VAC 3 phase @ 84, 50/60 Hz	
480 VAC 3 phase @ 62, 60 Hz	
600 VAC 3 phase @ 50, 60 Hz	

(Other plasma systems are available upon request to fit your needs, the above plasma system specifications are based on the Hypertherm HPR260 plasma system. Plasma system specifications are subject to change depending on the manufacturer and model of choice)

***Optional* marking system**

Supplier	Hypertherm
Air requirement	
	120 psi @ 6 scfm *99% clean, dry & oil free*
Electrical requirement	
	200 VAC 3 phase @ 8.3, 50/60 Hz
	208 VAC 3 phase @ 8.2, 60 Hz
	240 VAC 3 phase @ 7.9, 60 Hz
	400 VAC 3 phase @ 4.5, 50 Hz
	440 VAC 3 phase @ 4.2, 60 Hz
	480 VAC 3 phase @ 4.0, 60 Hz
	600 VAC 3 phase @ 3.3, 60 Hz

Software

Version	SICAM-SCC controller software
Features	DSTV file import
	DXF file import
	Auto-nesting
	Shape library
	Hole database
	Computer
	Networkable
	Common line cutting
	Automatic cutting process parameter setup
	(kerfs, speeds and delays)

For more complete information on this or any of our machines, contact our sales department at 501-557-5109 or sales@controlledautomation.com

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Controlled Automation specializes in the manufacture of automated structural steel drilling, punching, and shape cutting machinery. We also build material handling systems to complement each type of machine we offer. As well as new machinery, we are the industry leader in retrofitting control systems and remanufacturing existing structural steel fabricating machinery. All machines and controls are designed and manufactured entirely in the United States of America. All software is developed and supported in the United States of America.

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