

# **MultiCam<sup>®</sup>**

## **CNC Cutting Solutions**

### **Affordable Price and Precision Performance!**

The MultiCam<sup>®</sup> 3000 Series Waterjet cutting system is an affordable, easy-to-use, production cutting solution. We designed it for manufacturers needing to cut a wide variety of materials. High-pressure waterjet machining also offers unique advantages over other cutting technologies. It allows the user to cut highly accurate parts with excellent finish and no heat-affected edge.

All 3000 Series Waterjet machining systems are manufactured using high-tolerance, large-scale CNC metalworking machines. They are verified with certified laser calibration equipment. And every MultiCam 3000 Series Waterjet also comes with the full support of the MultiCam Technology Center network. With over 60 locations worldwide, MultiCam sales, service, support and training are always nearby.

All specifications subject to change.  
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### **MultiCam 3000<sup>®</sup> Series Waterjet Feature and Specification Guide**



**WATERJET**

#### **Applications:**

- **Aerospace**
- **Metal Fabrication**
- **Glass and Ceramics**
- **Boat Building**

**And More**

**Innovation. Quality. Performance.**

# 3000-WJ Series Specifications

## Standard Features

No machine in its class offers more standard features than the MultiCam 3000 Series Waterjet.

- All-steel, stress-relieved, integral water tank design
- Three-side cutting tank access for easy loading and unloading
- Integrated fork lift tubes for easy machine positioning and better rigidity
- Heavy C-channel guttering for water runoff and significantly increased machine rigidity
- Moving gantry with dual-side, brushless, digital AC servo drives
- Full 360-degree bellows on all axes
- Fast switching between pure water and abrasive cutting
- Weir settling tank and sump pump
- MultiCam EZ Control® and EZ Suite software
- Integrated PC with 19" LCD monitor
- Standard Ethernet interface with DNC file system and unlimited file size transfer capabilities
- EZ G-Code software standard
- Full range of KMT intensifiers available



## Options

- Single or dual abrasive head assemblies
- Up to four pure water heads
- Pneumatic drill
- Integrated CNC control air conditioner
- Chiller for intensifier
- Abrasive removal systems
- Air ballast water-leveling system
- Closed-loop filtration systems



# 3000-WJ Series Specifications

## Integral Water Tank Design

A heavy, all-steel water tank provides the base for all MultiCam 3000 Series Waterjets. Utilizing steel up to 1" thick, the base has a 35" working height for maximum operator efficiency. When the gantry is parked at the rear of the machine, the user has exceptional three-side access for easy loading and unloading. A bar grate table is standard. Slat and brick tables are optional. Abrasive removal and air ballast connections are standard.



## Weir Settling Tank

A Weir Settling Tank is standard on all MultiCam 3000 Series Waterjets. It's positioned below the water level height adjustment drain at the rear of the main cutting tank. Excess cutting tank water flows through each of the four chambers, allowing debris and other solids to accumulate in the tank. A sump pump is included for discharging cleaned water to the drain.



## C-Channel Guttering

Heavy C-channel guttering is integrated into the box-style water tank, providing outstanding rigidity to the tank and machine. The guttering is plumbed to the Weir settling tank for removal of overflow and spray-back water residue.



# 3000-WJ Series Specifications

## Air Ballast Water Leveling System

Machining waterjet parts under water reduces dust and debris from the cutting process. MultiCam's optional Air Ballast Water Leveling System will allow you to raise and lower the water level in the table by approximately 2". Larger systems are available on request for increased capacity requirements.



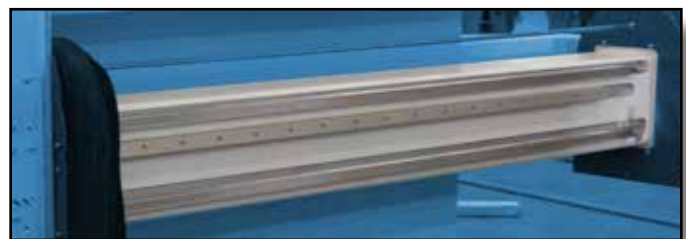
## Integrated Machine Bellows

Integrated 360-degree polyurethane bellows are standard on every MultiCam 3000 Series Waterjet. They protect all of the machine's precision mechanical components fully and allow easy cleaning.



## X-Axis Assembly

The X axis consists of two stress-relieved 6" x 8" structural steel tubes bolted to precision-machined surfaces on each side of the water tank. Each tube's rigidity ensures that water tank expansion and contraction won't affect machine tolerances. Dual 25-mm linear bearing rails mounted to machined surfaces on each tube provide significantly increased gantry support rigidity. The linear rack is mounted to a precision-machined surface for the X-axis drive assembly.





# 3000-WJ Series Specifications

## Linear Bearings and Rails

Standard 25-mm linear bearing profile rails with stainless steel spring strip covers are standard on the X and Y axes.

- High rigidity and load capacities in all load directions
- Lowest possible noise level and best running characteristics
- Four bearing packs per axis
- 4000-pound load capacity per bearing



## Gantry Supports

Precision-machined supports fabricated from 1" thick cast-aluminum tooling plate support the gantry on both ends. Cast aluminum provides inherent vibration-dampening characteristics, which translate into smoother cuts. Vacuum-formed ABS plastic covers the supports for overspray protection of all precision components.



# 3000-WJ Series Specifications

## Precision Planetary Gearboxes

Alpha Precision Planetary Gearboxes are the top of the line in the industry. Case-hardened, ground high-carbon alloy steel gears guarantee the lowest backlash and highest service life available. These gearboxes are among the many components that make the 3000 Series a smooth, accurate and long-lasting cutting system.

- Single Stage: 10:1
- Efficiency: > 97%
- Low noise level
- Designed for continuous operation with a 100% duty cycle



## Brushless AC Servo Motors

After extensive testing, MultiCam found Teknic Brushless AC Servo Motors to be the premier solution on the market today. Teknic has had an extensive history in motors and controls since its founding in 1985. It boasts a long record of providing critical components for military and aerospace applications and is a leading commercial and industrial supplier. Teknic creates servo motors that give MultiCam machines a competitive edge in the market.



## Linear Rack

The 3000 Series Waterjet utilizes linear rack and pinions for machine movement in the X and Y axes. Each 10' rack section is precision machined on a high-tolerance CNC mill from 1215 free machining, ASTM 108 cold-drawn steel for high strength and smooth surface finish. Rack and pinions are AGMA 9 rated with a nominal deviation of  $\pm 0.0015$ " from tooth to tooth. The rack system is designed for the pinion to be the wear item, allowing economical replacement when required.



## Gantry

The gantry is engineered for maximum stiffness from 10-mm thick aircraft-quality aluminum extrusion. References for the dual 25-mm precision linear bearings and rack are engineered into the design and have excellent parallelism. The result is a precision-engineered gantry with a high strength-to-weight ratio for quick positioning and reduced cycle times.



## Z-Axis Assembly

Every 3000 Series Waterjet utilizes a THK precision-ground ball screw guide actuator to provide an ultra-rigid, high-tolerance, low-profile Z-axis assembly. A precision mounting block with dual angular contact ball bearings for high axial-force loads holds the screw in place firmly. The precision-machined steel nut carries the Z-axis load. A high-torque, brushless, digital AC servo motor drives each Z-axis screw.



## Abrasive Feeder/Hopper System

All MultiCam machines equipped to run abrasive waterjet applications have a metered, highly accurate abrasive feeder/hopper system. The pressurized bulk hopper holds 6.5 cubic feet (approximately 500 pounds) of abrasive. A 0.25" ID nylon reinforced hose connects it to the abrasive feeder.

Fully programmable via the EZ Control, the feeder dispenses abrasive in fractional ounce increments. The hand-held keypad operates the abrasive feeder at varying rates during a program. Soft restart is a standard feature. It allows restarting of a program using pure water and introduces the abrasive where it left off so it won't damage the part.



# 3000-WJ Series Specifications

## Pneumatic Drill

The optional pneumatic drill is designed to predrill hard-to-pierce materials that have a tendency to crack or separate during piercing such as G10, laminates, fiberglass and acrylic.

- 1/3-hp air drill
- 16-CFM maximum air consumption (full load)
- 1/4" chuck capacity
- 700 rpm
- 3" stroke



## Digital Servo Drive System

Digital servo drives and brushless digital AC servo motors form a digital vector servo drive system that's standard on all MultiCam 3000 Series Waterjet machines. It integrates position, velocity and torque loops seamlessly to provide uncompromised tracking accuracy, smoothness and reliability.

This system is the latest in high-performance technology. It advances the state of the art by utilizing seamless coordination to allow real-time information sharing so all system functions cooperate in any situation. For example, if the torque loop senses that the AC servo motor reached 100% torque output, it passes upstream to the servo compensator instantly. Then the system delivers a coordinated response, maintaining precise control. You'll realize tighter tracking, smoother motion and faster rapid traverse for superior machine throughput and reliability.



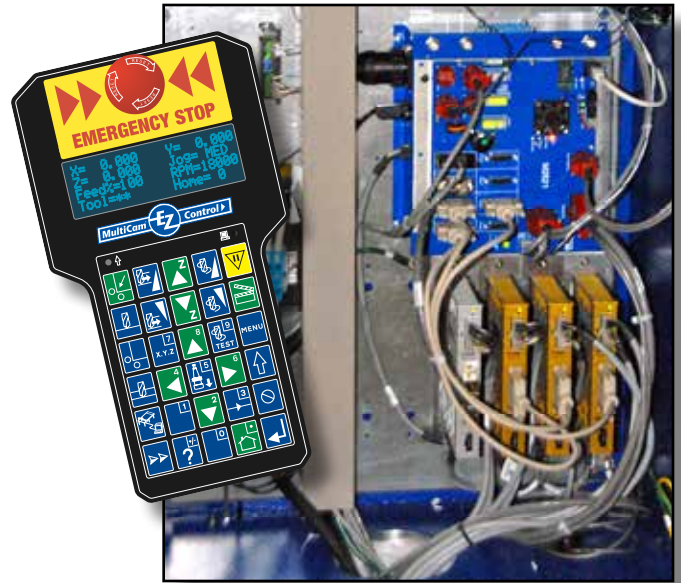


# 3000-WJ Series Specifications

## EZ Control

MultiCam's EZ Control features an advanced CNC interface that's very powerful yet easy to use. The PC front end, EZ Productivity Suite software, hand-held operator interface and industrial motion controller provide the ultimate in reliability, ease of use and sheer power. Keeping the motion control and PC separate allows for the most accurate and reliable motion control without bogging down the PC.

- 32-bit CPU
- Linear, circular, helical and smooth curve interpolation
- 64-bit motion control algorithms
- 1000-line look ahead
- Built-in self-testing and voltage protection
- 12-MB memory for unlimited file size transfer capabilities
- Industry-standard M and G codes
- Multiple home positions
- Proximity restart
- Tool compensation
- Cut and spindle rpm speed override
- Standard Ethernet TCP/IP connection
- MultiCam's exclusive hand-held operator interface



## Integrated PC

All MultiCam 3000 Series Waterjets include an integrated PC for quick access of Suite4 and EZ G-Code software at the machine.

- Intel 1.6-GHz CPU
- 1-GB RAM
- 160-GB hard drive
- 19" LCD monitor with polycarbonate overspray screen
- Windows 7® operating system



## Integrated EZ Control A/C

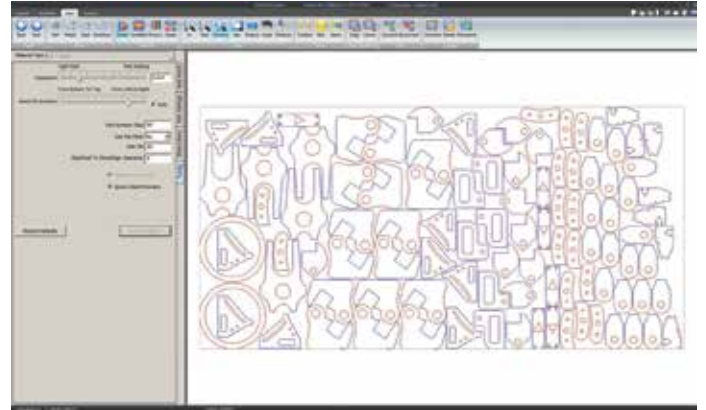
The optional integrated air conditioner is designed for 100-degree-plus ambient shop temperatures or locations with high humidity and the possibility of moisture condensation. This A/C is NEMA 12 rated and provides 1100 BTUs of cooling power.



# 3000-WJ Series Specifications

## EZ G-Code Software

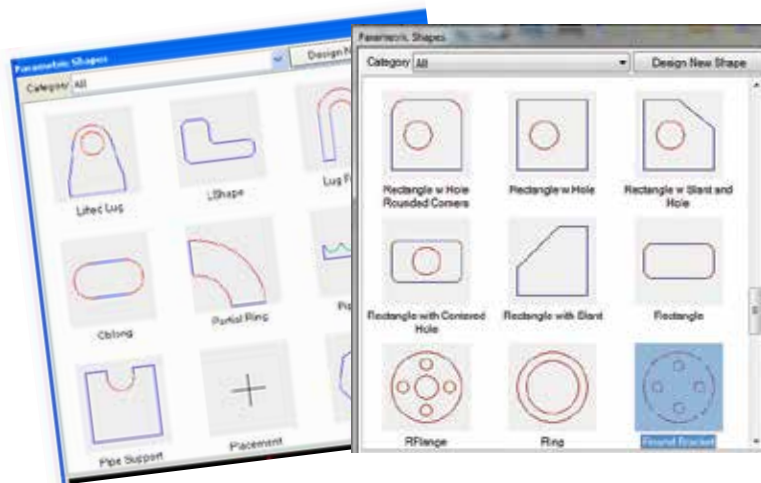
EZ G-Code develops machine-ready G-Code quickly, accurately and automatically in FOUR simple steps! MultiCam's EZ G-Code is an easy-to-use CAM software solution that is designed to make CNC cutting easier at the operator level. Designers understand the art of creating beautiful parts and units in sophisticated CAD programs, but operators know how to fine tune machines and get the best cuts possible.



### Create a Machine-Ready File in Four Simple Steps

1. Import	2. Toolpath	3. Nest	4. Output
Import most CAD files into EZ G-Code: <ul style="list-style-type: none"><li>• DXF</li><li>• Adobe Illustrator</li><li>• Adobe PDF</li><li>• HPGL</li><li>• CNC</li></ul>	Toolpath the part(s) and verify the preprogrammed process setting that populate based on material.	Nest multiple parts on one or more sheets of material.	Output to the machine.

The huge benefit of EZ G-Code is that the entire program from start to finish is easy to navigate simply by hitting the “Next” button. This takes the operator through the necessary steps to ensure perfect cuts every time.



## Built-In Shape Library



EZ G-Code comes with a built-in Shape Library. If you need to cut a simple parametric shape, there is no need to have a designer take time out of their day to draw it in a CAD program.

Shape sizes can be defined directly in the software with multiple shapes added to the job at once.



## Additional Capabilities Available With All Optional Modules (dongle required):

- Enhanced interface.
- No limit on tool processes.
- Multiple materials at one time (no material library): Several tools available to path to same vector.

# 3000-WJ Series Specifications

## KMT Waterjet Pumps

Since 1971, KMT Waterjet Systems has been a global leader in waterjet technology. Manufactured in the U.S. with worldwide support and service, precision-engineered pumps are extremely efficient and reliable.

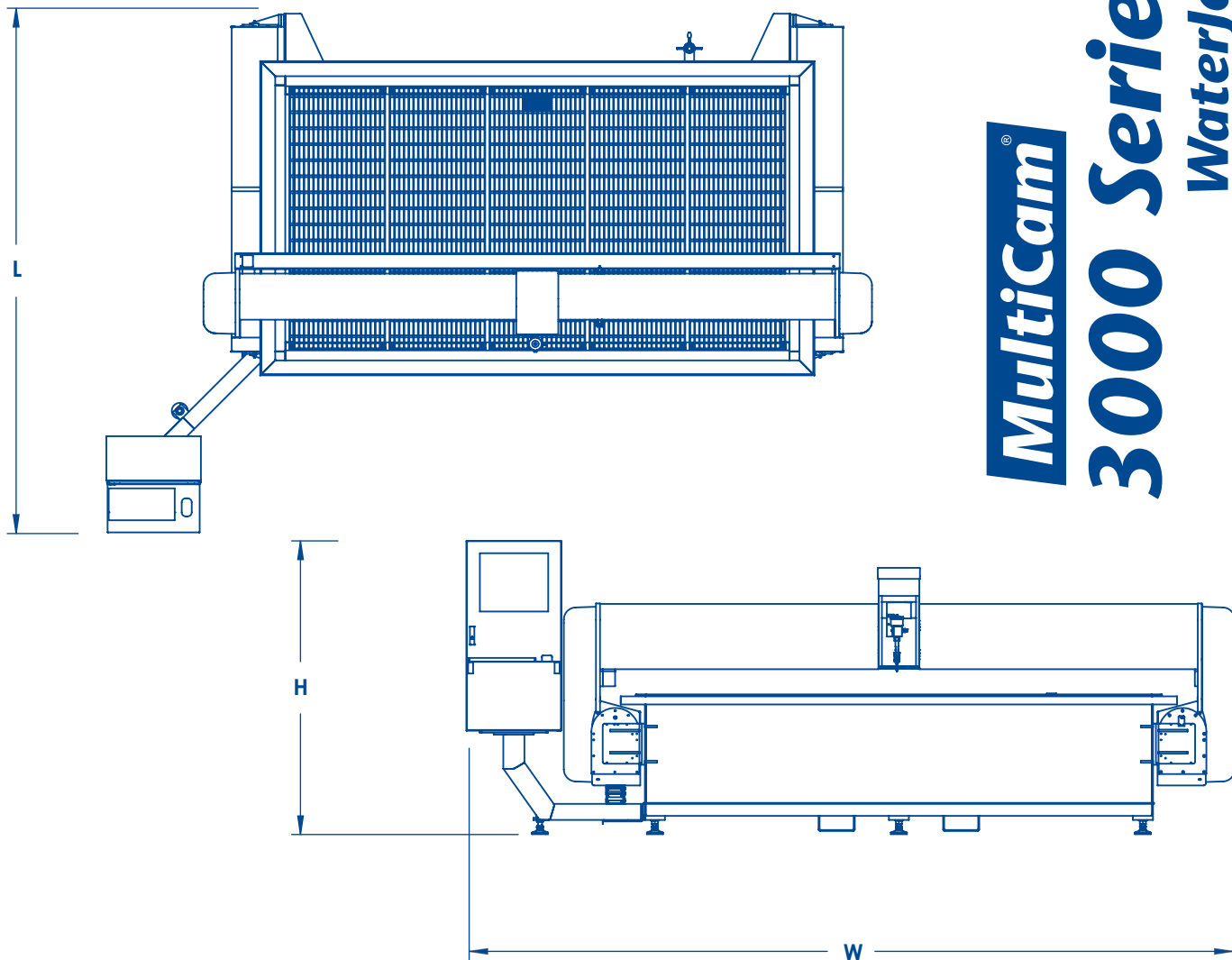
MultiCam is proud to offer a full spectrum of KMT intensifiers. They provide economical system integration with the massive power and maximum cutting speed of the 90,000-psi Streamline PRO Series Pumps.

Please contact your local MultiCam Technology Center for specific information and recommendations. MultiCam also will work with you to integrate the 3000 Series Waterjet machine with existing pump technology you may have.



# 3000-WJ Series Specifications

## MultiCam<sup>®</sup> 3000 Series WaterJet



### 3000 Series WaterJet Specifications

- Z-Axis Clearance 10"
- Z-Axis Travel 8"
- Repeatability: +/- .001"
- Positional Displacement Accuracy: +/- .005" over 10 feet
- Rapid Traverse: 2100 IPM
- Maximum cutting speed: 1500 IPM
- Drives: Brushless digital AC servo
- Drive System X and Y-Axis: Linear Rack and Pinion
- Drive System Z-Axis: Precision Ball Screw

### Size Chart (inches)

MODEL	L	W	H	WORKING AREA	WEIGHT LBS
3-202-W	130	131	73	60 x 60	3900
3-204-W	130	191	73	60 x 120	5400
3-304-W	150	191	73	80 x 120	6300
3-305-W	150	215	73	80 x 144	6900

### Size Chart (mm)

MODEL	L	W	H	WORKING AREA	WEIGHT kg
3-202-W	3302	3327	1854	1524x1524	1767
3-204-W	3302	4851	1854	1524x3048	2446
3-304-W	3810	4851	1854	2032x3048	2854
3-305-W	3810	5461	1854	2032x3657	6900