

MultiCam[®]

CNC Cutting Solutions

Features & Specifications Guide for MultiCam 3000 Series CNC Waterjet

Affordable Price... ...Big Performance!

The MultiCam 3000 Series Waterjet cutting system is an affordable, easy-to-use, production cutting solution designed for manufacturers that want the ability to cut a wide variety of materials. High-pressure waterjet machining also offers unique advantages over other cutting technologies allowing 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 and 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 70 locations worldwide. MultiCam sales, service, support and training are always nearby.

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Innovation. Quality. Performance.

3000 Series WaterJet Specifications

Standard Features

No machine offers more standard features than the MultiCam:

- All steel, stress-relieved, integral water tank design
- Three (3) side cutting tank access for easy load and unload
- Integrated fork lift tubes for easy machine positioning and increased machine rigidity
- Heavy C channel guttering for water run-off 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
- NC GeoMate CAM software standard
- Full range of KMT intensifiers available



Options Include:

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



3000 Series WaterJet 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 was designed to a operating height of 35” for maximum operator efficiency. When the gantry is parked at the rear of the machine, the operator has exceptional 3 side access for easy load/unload. A bar grate table is standard with optional slat or brick tables available. Abrasive removal and air ballast connections are standard.



Weir Settling Tank

A Weir Settling Tank is standard on all MultiCam 3000 Series Waterjets. The Weir Tank is 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 (4) chambers allowing debris and other solids to accumulate in the tank. A sump pump is included for discharging the 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 overall machine. The guttering is plumbed to the weir settling tank for removal of overflow and spray back water residue.



3000 Series WaterJet Specifications

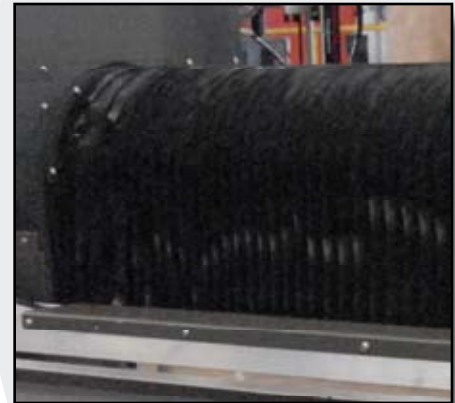
Air Ballast Water Leveling System

Waterjet parts can be machined under water which has the primary benefit of reduced dust and debris from the cutting process. MultiCam offers an optional Air Ballast Water Leveling System which will allow raising and lowering of the water level in the table by approximately 2". Larger systems are available on request for increased capacity requirements.



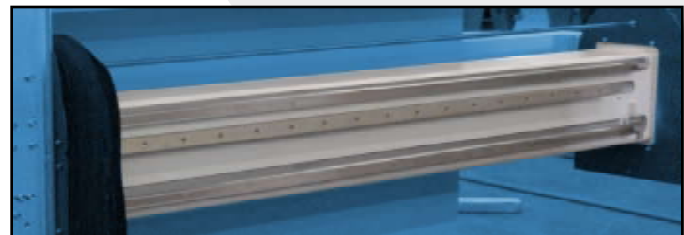
Integrated Machine Bellows

Integrated 360 degree polyurethane degree bellows are standard on all MultiCam 3000 Series Waterjets. The bellows fully protect all precision mechanical components of the machine and also allow the machine to be easily cleaned.



X Axis Assembly

The X axis consist of two (2) stress-relieved 6" X 8" structural steel tubes bolted to precision machined surfaces on each side of the water tank. The rigidity of each tube ensures that water tank expansion and contraction will not affect machine tolerances. Dual (2) 25mm linear bearing rails are mounted to machined surfaces on each 6" X 8" tube for significantly increased rigidity of the gantry supports. Linear rack is also mounted to a precision machined surface for the X axis drive assembly.



3000 Series WaterJet Specifications

Linear Bearings/Rails

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

Features include:

- High rigidity and load capacities in all load directions
- Lowest possible noise level and best running characteristics
- High torque load capacity
- 30,400 Nm or 22,421 lb-ft dynamic capacity per pack



Gantry Supports

The gantry is supported on both ends by precision machined supports fabricated from 1" thick cast aluminum tooling plate. Cast aluminum provides inherent vibration dampening characteristics which translates into smoother cuts. The supports are covered with vacuum formed ABS plastic covers for overspray protection of all precision components.



3000 Series WaterJet 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. Alpha Gearboxes are one of the many components that make the MultiCam a smooth, accurate, and long-lasting cutting system.

- Single Stage 10:1
- Backlash < 2 arcmin
- Efficiency > 97%
- Low noise level
- Designed for cyclic and continuous operation with a 100% duty cycle



Brushless AC Servo Motors

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



Linear Rack

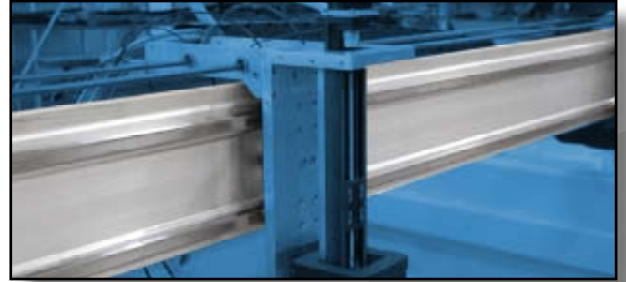
The 3000 series waterjet utilizes linear rack and pinions for machine movement in the X and Y axes. Each ten foot section of rack is precision machined on a high tolerance CNC mill from 1215 free machining, ASTM A 108 cold drawn steel for high strength and smooth surface finish. Rack and pinions are AGMA 9 rated with a nominal deviation of +/- .0015" from tooth to tooth. The rack system is designed for the pinion to be the wear item allowing economical replacement when required.



3000 Series WaterJet Specifications

Gantry

The gantry is engineered for maximum stiffness from 10mm thick aircraft quality aluminum extrusion. References for the dual (2) 25mm precision linear bearings and rack are engineered into the design and have excellent parallelism. The result is a precision engineered gantry that has a high strength to weight ratio for quick positioning and reduced cycle times.



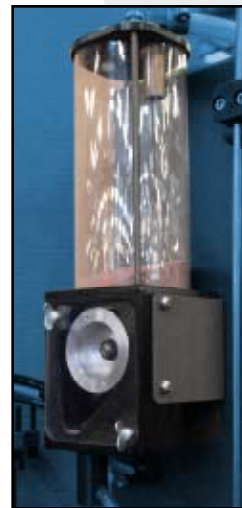
Z Axis Assembly

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



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 lbs.) of abrasive and is connected to the abrasive feeder via a 1/2" ID, nylon reinforced hose. The feeder itself is fully programmable via the handheld keypad and dispenses abrasive in fractional ounce increments. In addition, the abrasive feeder will operate under full CNC program control for varying rates during a program. Soft restart is also a standard feature that allows restarting of a program using pure water and introducing the abrasive at the point where it left off thus not marring the part.



3000 Series WaterJet Specifications

Pneumatic Drill

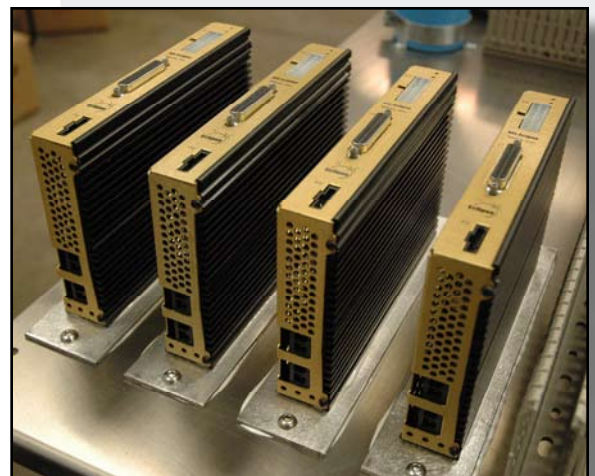
The optional Pneumatic drill is designed to pre-drill hard to pierce materials such as G10, laminates, fiberglass and acrylic which have a tendency to crack or separate during piercing. Specifications include:

- 1/3 HP air drill
- 16 CFM maximum air consumption (full load)
- ¼" chuck capacity
- 700 RPM
- 3" stroke



Digital Servo Drive System

Digital servo drives and brushless digital AC servo motors combine to form a digital vector servo drive system and are standard on all MultiCam 3000 Series Waterjet machines. These drive systems seamlessly integrate position, velocity, and torque loops to provide uncompromised tracking accuracy, smoothness and reliability. The drives used in MultiCam 3000 Series Waterjet machines are the latest in a line of high-performance drives that advances the state of the art by utilizing this seamless coordination in such a way to allow all information to be shared in real time so all system functions cooperate in any situation. For example, if the torque loop senses that the AC servo motor has reached 100% torque output, it is instantly passed upstream to the servo compensator and the system delivers a coordinated response, maintaining precise control. You will realize tighter tracking, smoother motion, and faster rapid traverse - all of which yield superior machine throughput and reliability.

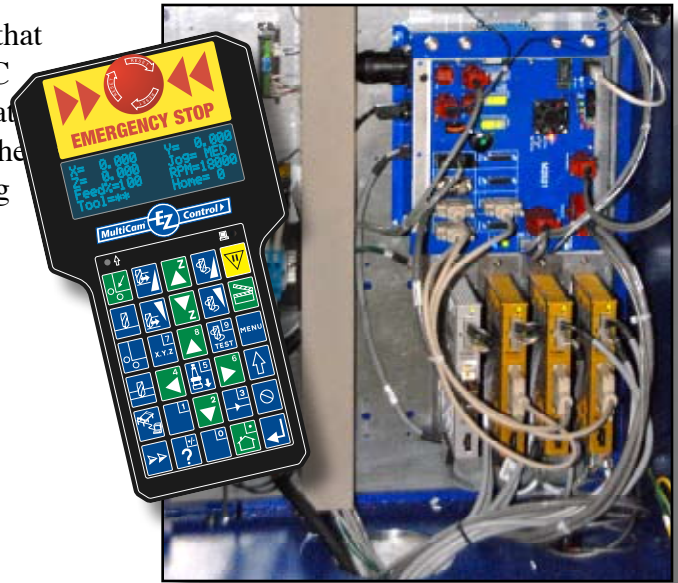


3000 Series WaterJet Specifications

EZ Control

MultiCam EZ Control features an advanced CNC interface that is a very powerful yet easy-to-use. The combination of a PC front end, EZ Productivity Suite software, a hand-held operator interface and an industrial motion controller gives the user the ultimate in reliability, ease-of-use and sheer power. Keeping the motion control and the PC separate allow for the most accurate and reliable motion control without bogging down the PC. No wonder MultiCam named its motion system EZ Control! Motion control features include:

- 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 of memory-unlimited file-size transfer capabilities
- Industry standard M & 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 come with an integrated PC for quick access of EZ Suite and NC GeoMate software at the machine. PC features include

- Intel 1.6 Ghz CPU
- 1 GB RAM
- 160 GB hard drive
- 19" LCD monitor with polycarbonate overspray screen
- Windows XP 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. The A/C is NEMA 12 rated and provides 1100 BTU's of cooling power.

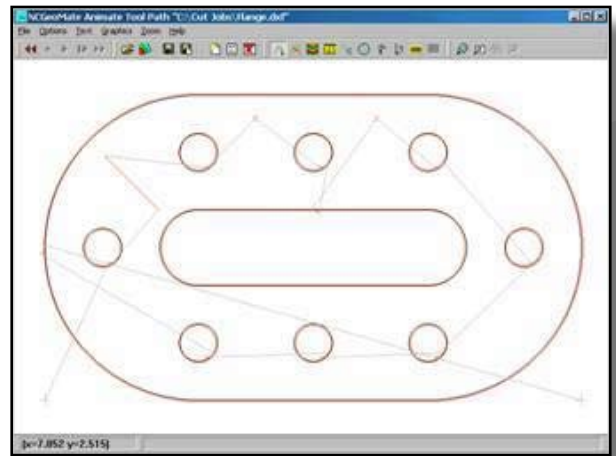


3000 Series WaterJet Specifications

NC Geomate Software

NC Geomate software is standard on all MultiCam 3000 series waterjets. It is a CAM software system specifically designed for waterjet operations. It features an extremely easy-to-use Graphical User Interface and knowledge of CNC code is not required. The operator simply selects a material, thickness and cut finish and the software does the rest! Features include:

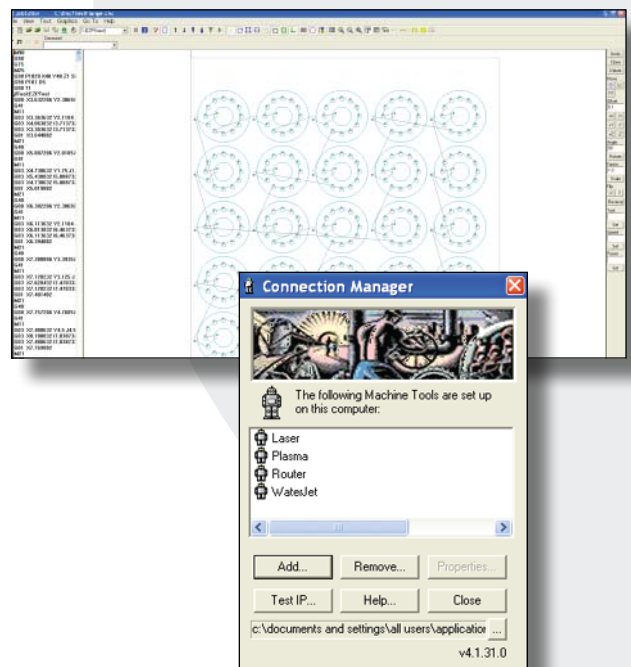
- DXF, EPS, PLT import filters
- Automatic kerf compensation
- Automatic lead-in's and lead outs
- Automatic feed rate calculation and ordering of cuts
- Interactive tool path display
- Integrated part cost calculator
- Optional "true shape" nesting package



EZ Suite Software

EZ Control comes complete with EZ Suite Software, a set of powerful MS-Windows based software applications. Each EZ Suite application brings valuable utility to machine owners and operators alike. Features include:

- Connection Manager
- Job Name Server
- Job Console
- Job Editor
- Job Reporter



3000 Series WaterJet Specifications

KMT Waterjet Pumps

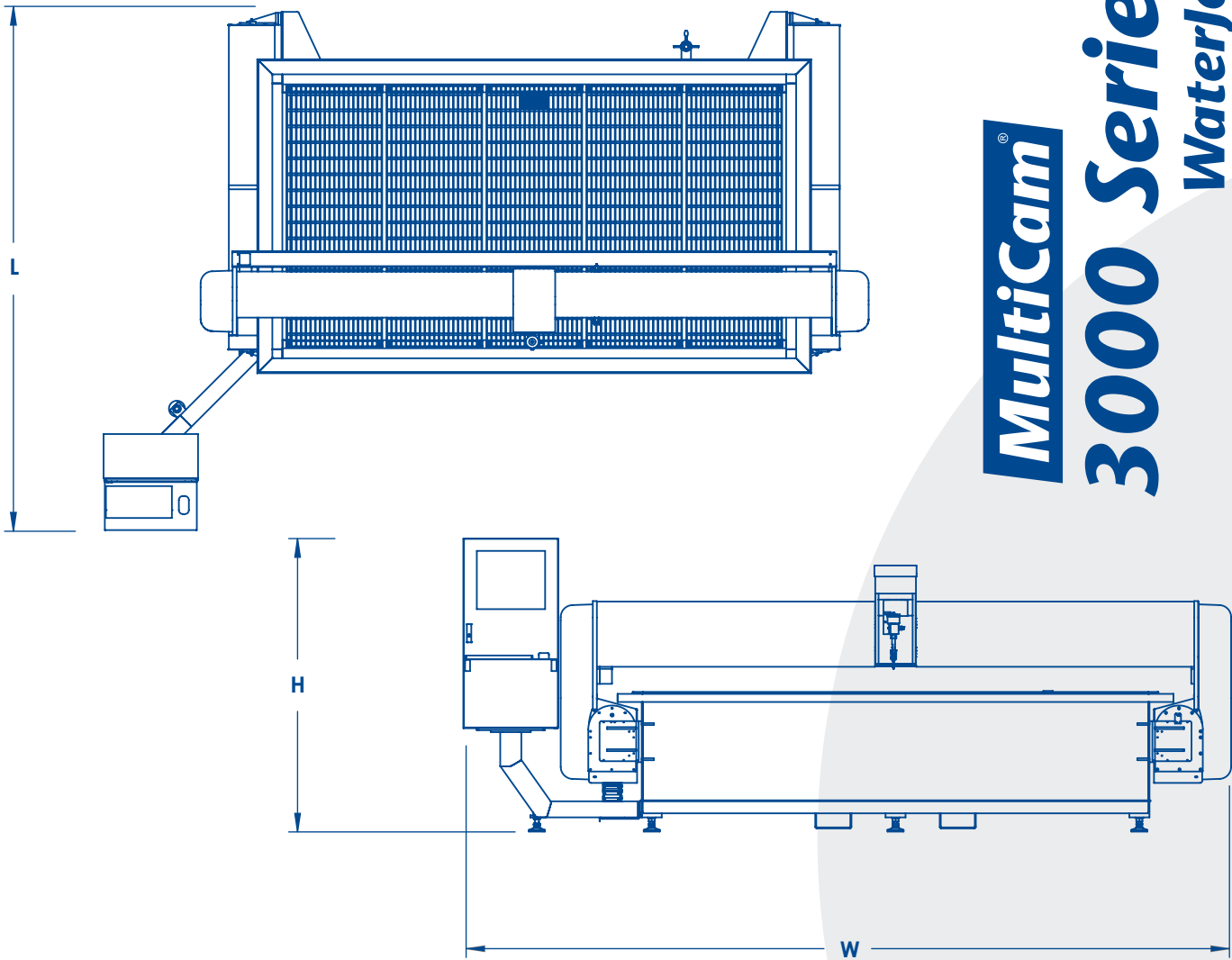
Since 1971, KMT Waterjet Systems has been a global leader in waterjet technology. Manufactured in the USA and supported and serviced globally, the pumps are precision engineered, highly efficient and extremely reliable.

MultiCam is proud to offer a full spectrum of KMT intensifiers from the Streamline S-30 for economical system integration to 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 is also happy to work with you to integrate the 3000 Series Waterjet machine with existing pump technology that you may already have.



3000 Series WaterJet Specifications

MultiCam[®] 3000 Series WaterJet



3000 Series WaterJet Specifications

- Z-Axis Clearance 10"
- Z-Axis Travel 8"
- Resolution: .0001"
- Repeatability: +/- .0005"
- Linear precision: +/- .0005"
- Positional Displacement Accuracy: +/- .005" over 10 feet
- Rapid Traverse: 1500 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