

# MultiCam<sup>®</sup>

## CNC Cutting Solutions

# MultiCam<sup>®</sup> 8000 Series Five-Axis CNC Router

### Feature and Specification Guide

## The Ultimate in Heavy-Duty, High-Performance Five-Axis CNC Routing

MultiCam<sup>®</sup> 8000 Series Five-Axis Routers offer the ultimate in high-performance CNC machining. Choose from a broad range of standard table sizes and Z-axis open-height configurations.

Designed for high-speed, heavy-duty routing, 8000 Series five-axis machines are easy to configure to meet demanding application requirements in woodworking, plastics, non-ferrous metals and composites industries.

Heavy-duty, structural-steel, tubular-frame construction coupled with a space-saving, moving-gantry design make the 8000 Series five-axis a robust, commercial-grade machine designed for today's competitive manufacturing environment.

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### Ideal for Cutting:

- Wood
- Plastics
- Non-Ferrous Metals
- Composite Materials

And More

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*Innovation. Quality. Performance.*

# 8000-R Series Feature and Specification Guide

**No machine in its class offers more standard features than the MultiCam 8000 Series Five-Axis Router.**

- High-performance OSAI five-axis control/drive package
- Stress-relieved, precision-machined, all-steel frame
- Unique RAM-Z axis assembly
- 35-mm linear ball-bearing profile rails
- 2700-IPM rapid traverse
- Standard automatic tool calibration



Thermoformed Plastic Parts



Molded Plywood Furniture



Structural Aluminum Components

## Five-Axis Applications

Five-axis CNC routing opens up a world of new applications for the end user including edge trimming thermoformed and molded plastic plus composite parts. Often featuring interior cutouts on an angled plane, they require simultaneous five-axis machining. Other applications include deep-cavity mold making that requires short tools. Molded plywood chair and decorative furniture parts require simultaneous five-axis machining many times.

Remember that a MultiCam five-axis CNC router can rotate in 90% increments and machine horizontally on all four sides of a part plus perform simple vertical machining from the top. Shops that don't think they have five-axis work may in fact benefit because this table allows machining on five separate sides of a part.

Many years ago, shops wondered why they should switch from manual mills to CNC. The scenario for investing in five-axis machining technology is similar. Those who didn't switch to CNC were left behind eventually. With any business, investing in the latest technology is a requirement to stay on top and compete effectively. Five-axis machining reduces overall setup time, increases accuracy and can expand your shop's capabilities for future work.



Composite Wind Turbine Parts

# 8000-R Series Feature and Specification Guide

## Automatic Tool Changer (ATC)

The 8000 Series Five-Axis Router is available with an optional 12-position rotary tool changer. It optimizes the system for bidirectional rotation and takes the shortest route to help reduce tool-changing time. All ATC systems come standard with automatic tool length calibration, and the tool change routines built into the controls simplify integration with your favorite CAM software. An Automatic Tool Changer solution helps reduce job times, improve accuracy and reduce setup errors.



## Standard Working Surface

Our standard working surface is 1" thick 80-82 Durometer phenolic with a grid pattern to utilize 0.5 x 0.25 foam gasket tape. We mount the phenolic on top of the steel base frame and machine it in place. This ensures a flat cutting surface normal to the spindle. Phenolic makes an excellent work surface because of its dependable mechanical strength and dimensional stability. In addition, phenolic has low-moisture absorption, resists heat and wear and is easy to repair as needed.



## Gantry

The gantry is a 0.5" thick, 20" x 12" internally-ribbed rectangular structural steel tube mounted on machined pads on the top of each box frame support. We weld, stress relieve and precision machine the gantry that features internal ribbing, ensuring a smooth, vibration-free cut. Dual 35-mm linear bearings spaced on 18" centers provide maximum RAM-Z axis assembly rigidity.

## Gantry Supports

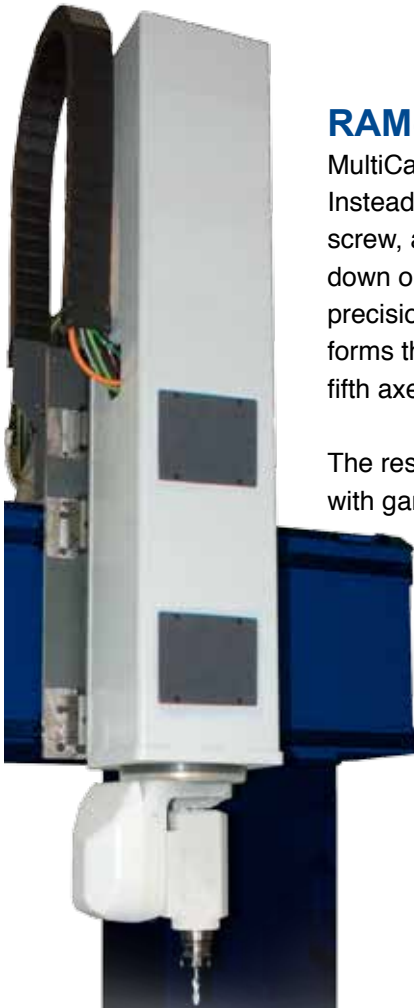
Two heavy box-frame steel weldments support the gantry. Each gantry support rides on four 35-mm bearing blocks on both sides of the machine for eight bearings total. We space each bearing 31" center to center, giving extraordinary rigidity and vibration-free movement of the gantry in the X axis. The result is over 76,800 pounds of bearing support capability on a gantry/Ram-Z axis assembly weighing approximately 7000 pounds. That's over a 10-1 safety ratio, which assures durability, smooth movement and accuracy over the life of the machine.



# 8000-R Series Feature and Specification Guide

## Base Frame

The MultiCam 8000 Series five-axis base is a one-piece steel frame that we weld, stress relieve and precision machine. It features 0.5" thick structural steel tubes to support the X-axis linear bearings. One-piece construction allows for a very accurate and smooth cutting system while greatly reducing installation time. It also removes the possibility for installation errors that could affect the system's performance and accuracy.



## RAM-Z Axis

MultiCam pioneered a unique design concept in its RAM-Z axis. Instead of driving a spindle-mounting plate up and down via a ball screw, a 12" x 12" structural-steel tube with internal ribbing rides up and down on six 35-mm bearing blocks to form the Z axis. A high-tolerance, precision-ground helical rack-and-pinion system drives the tube that forms the Z axis. We mount the spindle with its integrated fourth and fifth axes at the base of the tube.

The result is extraordinary rigidity in the Z axis and the ability to deal with gantry clearances from 24" to 48" easily. Our RAM-Z design far outperforms a conventional Z-axis ball-screw-driven assembly — especially in typical five-axis gantry configurations.



## Linear Bearings

The 35-mm ball linear-bearing profile rails with stainless spring-steel strip covers are standard in all axes. Linear bearings feature:

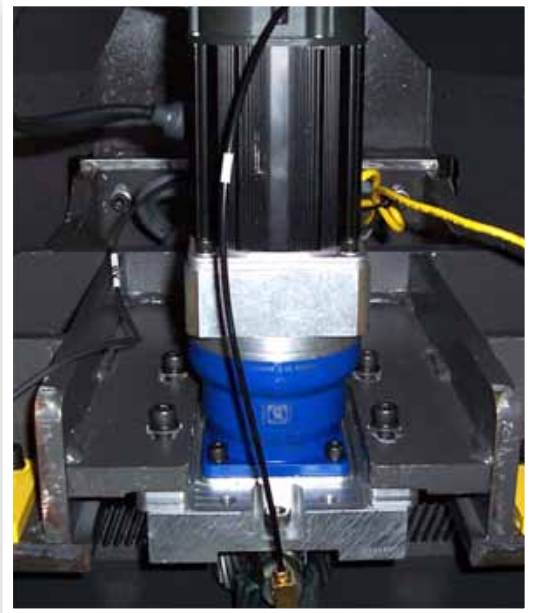
- High rigidity and top-load capacities in all load directions
- Lowest possible noise level and best running characteristics
- High-torque load capacity
- 9600-pound load capacity per bearing

# 8000-R Series Feature and Specification Guide

## Precision Planetary Gearboxes

Alpha Precision Planetary Gearboxes are the top of the line in the industry. Case-hardened and finished 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 MultiCam 8000 Series Five-Axis Router a smooth, accurate and long-lasting cutting system.

- Single Stage: 10:1
- Efficiency: > 97%
- Low noise level
- Integrated thermal length compensation
- Designed for continuous operation



## High-Speed Helical Rack System

A high-speed helical rack drive system is standard on the MultiCam 8000 Series Five-Axis CNC Router. With speeds of 2700 IPM, this system can get to a full-speed move in less than half a second. The helical rack achieves fast acceleration and accuracy because it engages a greater number of teeth than straight racks. Distributing the load over several teeth also reduces wear and increases the life of the rack-and-pinion system. The Helical Rack System is important to companies wanting to cut smoother, faster and more accurately.

## OSAI Control

MultiCam chose the OSAI 10/Series high-performance compact CNC control and digital ac servo drive system for the 8000 RAM-Z Five-Axis CNC Router. This OSAI product utilizes a state-of-the-art PC technology hardware platform that runs an easy-to-use, multitasking operating system. We feel that its ability to control the tool center point (TCP) in programming is the best in the industry, and the control/drive/drive motor package has many years of market-proven trouble-free performance.

This system uses standard M- and G-codes. The operator can program it easily using five-axis AlphaCam, MasterCam or similar PC-based CAD/CAM software packages.



# 8000-R Series Feature and Specification Guide

## Standard Features



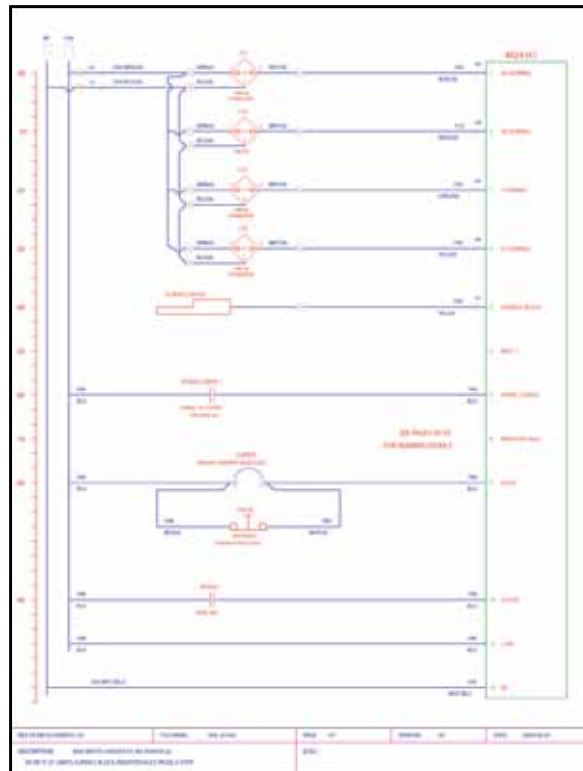
Leveling Feet



Tool Box



Operation Manual

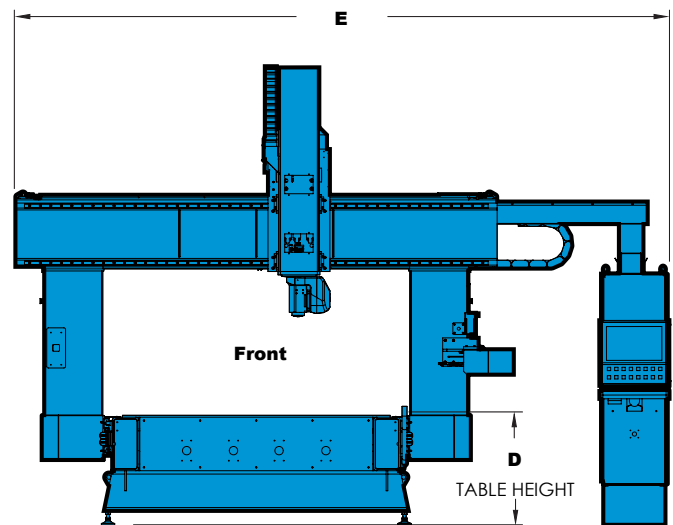
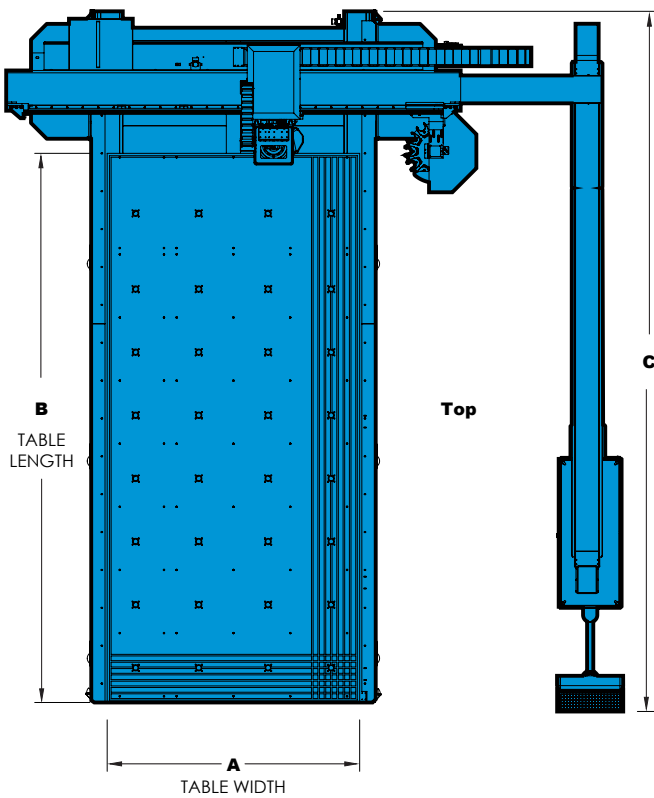


Electrical Schematics

# 8000-R Series Feature and Specification Guide

## 8000-R Series Specifications

Frame Machining Tolerance: $\pm 0.0005''$
Max. Rapid Traverse (Inches): (X, Y): 2700 IPM (Z): 800 IPM
Max. Rapid Traverse (Metric): (X, Y): 68.6 MPM (Z): 20.3 MPM
Power: 7 kW: 9.45 hp, 100% Duty Cycle
8.7 kW: 11.75 hp, 60% Duty Cycle
Max RPM: 20,000
Tool Holder: HSK F63/ER-40 Collet
Automatic Tool Length Sensor: $\pm 0.0009''$ ( $\pm 0.023$ mm)



Size Chart (Inches)					
Model	A	B	C	D	E
8-204-R	60	121	150	34	176
8-205-R	60	145	174	34	176
8-206-R	60	169	198	34	176
8-207-R	60	193	222	34	176
8-208-R	60	241	270	34	176
8-303-R	80	100	129	34	196
8-304-R	80	121	150	34	196
8-305-R	80	145	174	34	196
8-306-R	80	169	198	34	196
8-307-R	80	193	222	34	196
8-308-R	80	241	270	34	196

Size Chart (Metric)					
Model	A	B	C	D	E
8-204-R	1524	3073	3810	864	4470
8-205-R	1524	3683	4420	864	4470
8-206-R	1524	4293	5029	864	4470
8-207-R	1524	4902	5639	864	4470
8-208-R	1524	6121	6858	864	4470
8-303-R	2032	2540	3277	864	4978
8-304-R	2032	3073	3810	864	4978
8-305-R	2032	3683	4420	864	4978
8-306-R	2032	4293	5029	864	4978
8-307-R	2032	4902	5639	864	4978
8-308-R	2032	6121	6858	864	4978

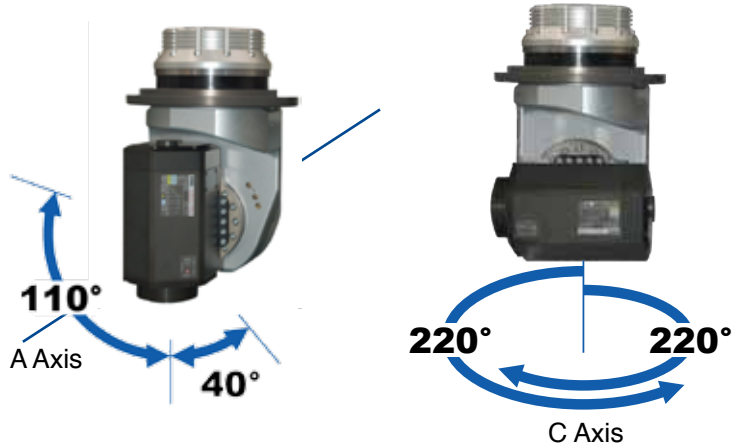
Specifications subject to change.

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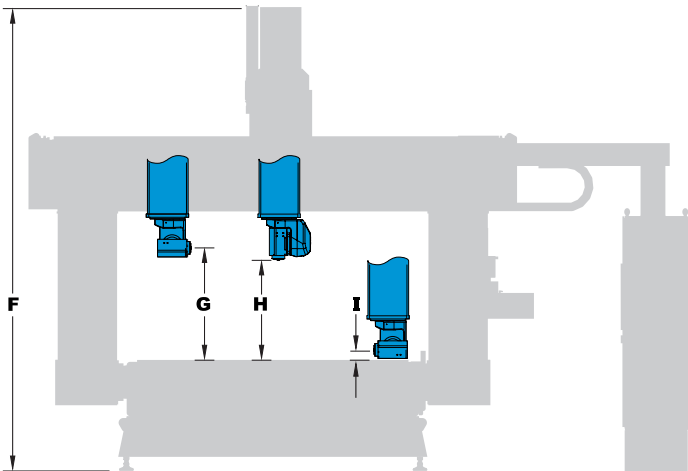
## Spindle Rotation

A-Axis Rotation: + 100°/- 40°

C-Axis Rotation: ± 220°



## Z-Axis Stroke/Clearance

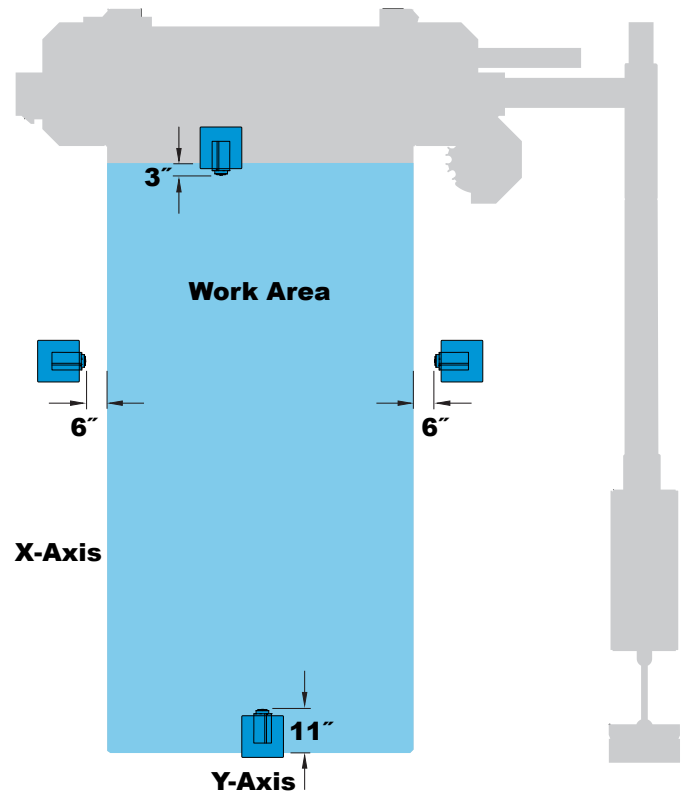


Size Chart (Inches)				
Z-Stroke/ Clearance	F	G	H	I
24	125	21	15	4
36	137	33	27	4
48	149	45	39	4

Size Chart (Metric)				
Z-Stroke/ Clearance	F	G	H	I
610	3175	533	381	102
914	3480	838	686	102
1219	3785	1143	991	102

## X/Y Clearance

Spindle - Horizontal Position



Specifications subject to change.