EX-FACTORY

Model 67

Shown with optional Chip Collection Hood. Machine Enclosure removed for clarity.

New

Shown with Standard Machine Enclosure and optional Chip Collection Hood.

Table	
Size	Single 5'x5', 5'x10', 10'x5' Dual 5'x5', 5'x10'
Type	Moving
Number of Servo Axes	**5 (X, Y, Z, C and B)**
Tooling	
7 HP Single End Router	Standard
7.5 HP Dual End Router	Available
7.5 HP Heavy Duty Dual End	Available
8 HP Automatic Tool Changer	Available
Bulk Tool Changer	Available
Chip Collection Hood	Available
Part Hold Down	
4HP Conventional Vacuum	Available
Performance	
Feed Speed (1500 IPM)	Standard
Turbo Speed (3000 IPM)	Available
Utilities Required	
Electrical	
460 VAC, 60 Hz	Standard
220/208 VAC, 60 Hz	Available
575 VAC, 60 Hz	Available
Air	90 PSI

EX-FACTORY

Model 67 Five Axis CNC Router- Package Pricing

(Bold items are included in the package, items beginning with "For" are substitutions, and items begining with "To add" are add-on options.)

Model 67, Moving Table Fixed Gantry CNC Router

- **24" Z Axis, 1,500 inch per minute maximum feed speed**
- **Engineered steel construction, track ways, AC servo ball screw drives.**
- **Machine Enclosure**
  - *For 36" Z Axis ADD $4,790*

To add the following:

- *Turbo Speed (3000 IPM) ADD $9,950*
- *Automatic Lubrication ADD $2,750*
- *Automatic Tool Length Measurement ADD $950*
- *4 HP Conventional Vacuum Pump ADD $4,515*
- *Vacuum Plumbing, single table ADD $1,350, Dual table ADD $1,995*
- *Gantry Lighting System, Single Table ADD $495, Dual Table ADD $695*

5' x 5' moving aluminum multi function table

- *For Single 5'wide by 10'deep Table ADD $18,000*
- *For Single 10'wide by 5'deep Table ADD $18,000*
- *For Dual 5'x 5'Tables ADD $24,000*
- *For Dual 5'x 10'Tables ADD $48,000*

7 HP High Frequency Router Spindle, variable programmable speed 3,000 to 18,000 RPM

- *For 7.5 HP Dual End variable speed spindle ADD $4,440*
- *For Heavy Duty 7.5 HP Dual End variable speed spindle ADD $9,720*
- *For 8 HP single end spindle, automatic tool changer and 6 tool holders ADD $16,300*
- *To add Bulk Tool Changer ADD $23,500*
- *To add Five Axis Chip Collection Hood ADD $2,775*

91000 SuperControl open architecture, multi-tasking CNC control with network card

To add the following:

- *Hand Held Programmer ADD $1,950*
- *Control Workstation ADD $1,495*
- *Uninterruptible Power Supply ADD $355*
- *Trackball ADD $195*
- *CD Rom Drive ADD $295*
- *Bar Code Input System ADD $1,350*
- *Talking Control ADD $995*
- *Programming Probe ADD $14,500*
- *Part Measurement Touch Sensor ADD $7,995*

Training and Installation Assistance

This package qualifies for the Advanced Support Program

Wired for 460 VAC, 3 Phase, 60 Hz

- *For 208 VAC, 3 Phase, 60 Hz ADD $2,125*
- *For 220/240 VAC, 3 Phase, 60Hz ADD $1,995*
- *For 575 VAC, 3 Phase, 60 Hz ADD $2,250*

The Best Value...

EX-FACTORY

*The **Model 67** is an industrial quality, high performance 5 Axis Trimming Center with advanced features, high throughput and a low cost. It has a CNC control which second to none, providing capabilities not available from others at any price. The **Model 67** is designed for continuous industrial production, high quality output and long operating life.*

*The **Model 67** is built in the US by Thermwood Corporation, the industry leader in CNC Routers. Thermwood is a public company, listed on the AMEX and has sold over 100 million dollars in CNC Routers.*

*The base **Model 67** comes in four table sizes, a single 5' x 5' table, a single 5' x 10' table, dual 5' x 5' and dual 5' x 10" tables. It comes standard with a 7 HP, 3,000 to 18,000 RPM variable speed spindle and a 91000 SuperControl.*

*The features and options of the **Model 67** make it the best value in CNC trimming today.*

***Engineered Steel Construction** The Model 67 uses engineered steel construction which provides a highly rigid structure without excessive weight which robs performance. The structure, drive system and control are expertly integrated to provide the best possible overall performance.*

***Track Ways** Precision track ways and linear bearings provide load carrying capacity and rigidity far superior to lower cost round ways. Some low cost machining centers use round ways. The Model 67 uses track ways exclusively. We do not achieve our low price by using less than the best.*

***AC Servo Drives** Low cost machines typically use DC Servo motors and drives. Because of their design, AC Servo motors can generate burst of power many tines that of comparable DC motors. This allows higher acceleration which means faster cycle times. And, because of the simple design, AC Servo systems tend to be more reliable than DC Servo systems. In actual tests, identical programs ran up to 36% faster on AC Servo driven machines than on DC Servo driven machines. When comparing the Model 67 to low cost DC Servo machines, remember that their production rates may fall well below the Model 67 actually **making them more expensive** per unit of production. The Model 67 uses only AC Servo drives, and we use one of the highest quality systems available.*

***Screw Drives** A screw drive is over 99% efficient versus a rack drive which is seldom more than 75% efficient. Although screw drives are more expensive, the Model 67 uses them exclusively.*

***CAD/CAM Compatible Head** The Model 67 includes a precision aligned machining head and laser calibrated linear axes. The result is a machine which can accurately execute programs generated off line by a CAD/CAM system. Programs can also be exchanged between Thermwood machines without editing. Other machines require extensive editing to exucute CAD/CAM generated programs accurately and programs cannot be exchanged between machines since the program must compensate for the inaccurate execution of the machine and each machine is different.*

***SuperControl** The Model 67 is equipped with a 91000 SuperControl. This advanced, state-of-the-art CNC control has speed, features and capabilities not found on controls which cost more than the entire machine. But, just because it is high performance doesn't mean it is difficult to use. In fact, much of the power of the SuperControl is used to make it easy to program and use. An extensive array of both software and hardware options and an advanced, state-of-the-art architecture assures you that your system will be able to deal with the future as technology changes.*

***Optional Tooling** The Model 67 can equipped with optional tooling to perform most plastic trimming and 3D machining operations. It comes standard with a 7 HP, 3,000 to 18,000 RPM variable speed spindle. A 7.5 HP or a heavy duty 7.5 HP, dual end spindle can be substituted for the standard 7 HP single end spindle. These spindles have a collet on each end and can be equipped with two different tools at the same time. If more than two different tools are required each cycle, an 8 HP automatic tool change spindle can be added. A 1/3 HP, 4750 RPM, 4 inch stroke air drill can be mounted to the spindle motor for drilling applications or a special tool mount and slide allows the customer to add part specific air tools for special requirements. The Model 67 offers a high degree of tooling flexibility to address almost any five axis trimming requirement.*

1. Better Performance

Thermwood uses high performance, high reliability AC servo drives exclusively. This means higher acceleration and faster cycle times. Track ways and ball screw drives result in a smooth, highly efficient drive system. Rugged, extended duty router heads mean smooth accurate cuts. A multi-tasking control means the next job can be set up and edited while the current job is running, saving change over time. All this means your Thermwood router produces more parts per day.

2. More Choices

Thermwood offers a broad line of standard CNC routers with a model ideally suited to almost any requirement. The machine can be tailored to your specific application by selecting from an extensive list of machine, control and software options. This approach results in a machine that is better suited to your specific application than some expensive "custom" machines. Because both the machines and options are standard, changes in your requirements in the future can be easily handled by adding or changing machine, control or software options. Your Thermwood machine can change as your production requirements change.

3. Better Control

The 91000 SuperControl is one of the most advanced CNC controls in the world. It is true "open architecture" which means other software including DOS, Windows™ and OS/2® based programs can be run on the control. It is also "multi-tasking" which means that these other applications can run while the machine is in production. The possibilities are incredible. Communicate on a network or E-mail from the control while the machine is in production. Program one part on the control using a CAD system while another is being produced by the machine at the same time. A huge hard disk stores thousands, hundreds of thousands , even a million programs in the control at the same time. Every program for your entire factory can likely be stored in the control at one time. The SuperControl uses multiple computers in the control to process CAD generated data at surprising speeds. This same raw computing power makes possible an impressive list of exclusive features including an incredibly easy to use probe programming system. The 91000 SuperControl is even more impressive when you consider that commercially available ultrahigh performance CNC controls, which fall far short of the SuperControl, sell for more than an entire Thermwood machine.

4. Highly Reliable

The AC Servo drives used on Thermwood machines are some of the most reliable drives available. The control boards are surface mounted, solid state, again, the most reliable packaging available. The control cabinet is sealed and air conditioned to add reliability. The mechanical systems are simple in design and rugged in construction, a combination that insures reliability. This emphasis on reliability has resulted in machines which have historically enjoyed an uptime of over 99.7%.

5. Better Service

Thermwood has an entire corporate division dedicated to helping the customer, the Technical Services Division. This help includes basic things like customer training, installation assistance, a toll free help line and overnight spare parts. It also includes advanced programs such as custom programming, relocation assistance, upgrading and modifying existing machines and production assistance. The Technical Services Division even publishes a catalog of tooling and support products, most available overnight. Service can be as important as the machine itself.

6. Better Value

With all these features and capabilities, you might think that Thermwood machines must be more expensive than other "lesser" brands. In many cases Thermwood is actually lower cost. Thermwood builds standard machines in high volume in an automated factory. With a dedicated work force, we achieve low machine price by efficiently producing each machine, not by reducing the quality of materials or the capability of the equipment. Highly capable machines at a low price, that is the definition of value. That's what Thermwood produces, the best values in the industry.

AC Servo... the key to performance

All Thermwood machines use AC Servo drives because they have many advantages over lower cost DC drives. These advantages translate to better machine performance, faster cycle times and more profit. AC Servo drives were introduced in the mid-1980s. Since then, they have widely replaced DC drives in applications where performance is important. The major difference in performance results from the basic design of the motor.

A DC motor has permanent magnets on the motor frame and windings on the rotor. Electric current must pass to the rotor through a commutating ring and brush. In an AC motor, the permanent magnets are located on the rotor and the armature windings are on the frame. The AC motor owes its superior performance over the DC motor to this basic design. These advantages include:

Rotor Inertia *Since the rotor of a DC motor contains the armature windings, it has a much higher inertia compares to an AC motor whose rotor contains the permanent magnets. For motors of a similar torque rating, this can be a difference of up to a factor of 4 in favor of the AC motor. A lower rotor inertia means that an AC motor can accelerate much faster than a DC motor of the same torque rating.*

Motor Size *Since armature windings of a AC motor are located next to the frame, heat generated by the armature current can be efficiently radiated through the motor frame to the surrounding air. In a DC motor, the armature current runs in the rotor which cannot easily radiate heat since it is surrounded by the permanent magnets. Motor torque is directly proportional to motor current. It is typical for an AC motor to have a 50% higher torque rating than a DC motor of the same dimension.*

Torque Rating at High Speed *The commutator ring and brush system in a DC motor becomes less efficient as motor speed increases which many times require that the motor current (torque), be decreased at higher speeds. AC motors, which are commutated electronically, have no such limits.*

Brush Maintenance *The commutator ring/brush system found on DC motors and the tachogenerator used for feedback require regular service which in many cases is not performed because of the difficulty in accessing the brushes. Brush life is susceptible to airborne contamination and brush life is shortened in many industrial environments. The AC motors have no brushes to change, and are therefore "maintenance free".*

AC Servo motors and drives do have one disadvantage, they are initially more expensive than DC drives. Considering maintenance, performance and reliability, however, they are much less expensive over the life of a machine. Thermwood could sell its products at a lower initial cost if we used lower cost DC drives and motors, but, some short cuts are just not worth taking.

The Probe...vital to programming

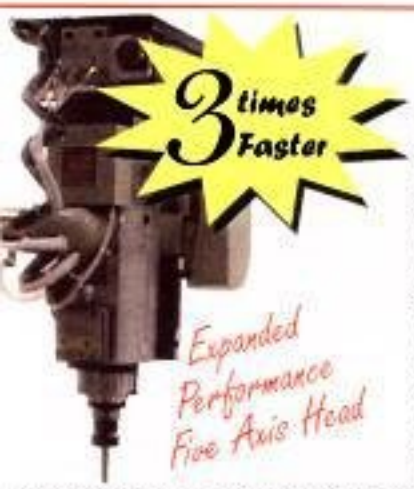
Creating good quality five axis trimming programs has historically been a tedious, difficult and time consuming process. Free flowing curves in space could require days to program and then the result might be less than desirable. Thermwood's Probe now makes five axis programming easy.

Thermwood's patent pending Probe mounts in place of the cutting tool. The Probe tip is moved by hand to trace a trimmed part and create the trimming program. The entire machine moves to follow the Probe tip as it is moved around. The Probe becomes a type of "power steering" for the machine. All five axes can be moved. The motion is simple and natural.

There are several ways to create a program using the Probe. You can move to a point, enter it, move to the next point, enter it and so forth. This will result in smooth curved path in space. You can also pick up points and use Thermwood's CAD path software to create a program similar to that created by a CAD/CAM program. Regardless of the method or combination of methods used, programming has never been easier or faster than with Thermwood's Probe.

Thermwood's Probe System is an absolute necessity in any serious five axis trimming installation. Just the extra production time available from reduced programming will pay for the Probe quickly. Reaction time is faster, new parts come on line quickly and overall product quality improves.

Model 67...Expanded Performance Five Axis Head



Thermwood currently equips its Model 67 with an improved ***Expanded Performance Five Axis Head****. This head provides the rotary motion needed to position the router at any angle in space. The new head accelerates and decelerates* ***twice*** *as fast and has a top speed* ***three times*** *as fast as our previous head, and it was the fastest in the industry. It uses high performance AC servo drives for maximum performance and reliability. The Expanded Performance Head can move from one extreme position to the other extreme in 1.7 seconds. It also will average 900 milliseconds or less positioning time in program execution. This translates into faster cycle times, more production and lower cost. The new head is smooth and rigid without the need for external brakes or other "crutches". Thermwood machines can execute full five-axis simultaneous motion cutting with all five axes at the same time. This compares with other machines that can execute a maximum of only three axes simultaneously. Or machines which cannot cut while the rotary axes are moving. The Model 67 is a high-performance state-of-the-art production machine.*

Thermwood's Expanded Performance Head provides true intersecting axes alignment and per axis rotary position compensation. This means that the head can accurately execute programs developed using off-line CAD/CAM systems. It means that a program from one machine will accurately execute on another. This provides the capability of accurate mold and pattern making as well as part trimming from CAD data. Others simply can't provide this level of accuracy and require that programs be written on the machine to compensate for alignment inaccuracies. These programs can only be run on the machine they were programmed on.

Faster speed, greater capability and consistent accuracy make the Expanded Performance Head one of the reasons that Thermwood is the standard for five axis machines in this industry.

Model 67 Options...Tooling

Thermwood's 5 axis machining head is the result of over 15 years of refinement working with demanding aerospace applications. It is a rugged cast iron assembly which uses oversize precision tapered roller bearings for smooth, accurate absolute positioning. Even small errors in alignment of rotary axes will result in inaccurate execution of CAD/CAM generated programs and will make it impossible to move programs from one machine to another without extensive editing. Unlike our competitors, Thermwood 5 axis heads are built to aerospace standards assuring accurate execution of CAD/CAM programs and eliminating the need to develop a separate program for each machine. The head comes standard with a 7 HP, 3,000 to 18,000 RPM variable speed single end spindle.

Dual End Spindles

A dual end spindle features a collet on each end. This allows two different tools to be used during a trim cycle. A rotary electric slip ring system allows continuous rotation of the spindle resulting in faster cycle times. Note that a right hand tool is needed for one end and a left hand tool is needed for the other.

7.5 HP*, dual end variable speed spindle, 3,000 to 18,000 RPM, with a maximum collet capacity of 5/8". Dual end spindle is a replacement for the standard 7 HP single end spindle.* ***$4,440***

Collets *for 7.5 HP dual end spindle, in sizes 1/8", 1/4", 3/8", 1/2" and 5/8"* ***each*** ***$40***

7.5 HP*, heavy duty dual end, variable speed spindle, 3,000 to 18,000 RPM, with a maximum collet capacity of 1" on one end and 5/8" on the other to replace the standard 7 HP single end spindle. Note that this option limits the Z axis travel to 21 1/4 inches instead of 24.* ***$9,720***

Collets *for 7.5 HP heavy duty dual end spindle,*

Primary End *in sizes 1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2", 5/8", 3/4" and 1"* ***each*** ***$35***

Secondary End *in sizes 1/8", 1/4", 3/8", 1/2" and 5/8"* ***each*** ***$40***

Programmable Spindle Speed

The speed of variable speed spindles is normally controlled manually using a knob on the control panel. This option allows the spindle speed to be changed within a program. Spindle speeds can be changed between 3,000 to 18,000 RPM. ***$1,995***

Tool Changers

Tool changers use an 8 HP single end power draw bar spindle. The 8 HP spindle has a variable speed of 3,000 to 18,000 RPM and a maximum collet capacit y of 3/4".

Automatic Tool Changer *6 tools are mounted to the gantry leg. The spindle moves to the tools, automatically changes tools and returns. Ideal for more complex applications which require several tools during each trim cycle.* ***$14,995***

Manual Quick Tool Changer *button releases tool holder is manually removed and replaced. Ideal for changing tools between parts, not for use in replacing tools within a cycle.* ***$10,720***

Additional tool holders *for tool changers. Option includes a retention knob and covernut.* ***$232***

Collets *for 8 HP single end spindle, in sizes 1/8", 1/4", 5/16", 3/8", 1/2", 5/8" and 3/4"* ***each*** ***$34***

Auxiliary Tool Slide

This is a slide and tool mount which attaches to either the spindle for full 5 axis motion or the axis 5 casting for three axis motion. The slide has four inches of air slide stroke and comes with three pinch style mounts for mounting standard air tools. This is ideal for addressing special applications or unique requirements. ***$3,425***

Air Drill

Rockwell 1/3 HP air drill, 4,750 RPM. The drill is mounted to the spindle and thus has full axis articulation. Drill has four inches of total stroke and 1 inch of adjustable damping ***$5,420***

Model 67 Options...Control

The 91000 SuperControl is not a PC nor is it a proprietary control... it is a hybrid. It combines the flexibility and compatibility of a PC with the blazing performance of a high end proprietary CNC control, it uses multiple processors to achieve this performance. It runs under a full, multi-tasking operating system which means that it can execute multiple programs simultaneously. It is open architecture which means that it can run software not developed by the control manufacturer. The SuperControl can run programs developed for DOS, Windows™ or OS/2®. Commercial controls are striving for this type of flexibility and performance, however, today the SuperControl stands alone.

Control Workstation

This option provides a comfortable, convenient workstation right at the control. It consists of a vinyl covered, adjustable chair, a contoured shelf, an auxiliary keyboard which functions concurrent with the system keyboard, a mouse and inlaid mouse pad. The shelf mounts to the system control cabinet and is covered with a high pressure laminate and edged with T molding. It has a place for the Hand Held Programmer and a tool tray plus a dust cover. ***$1,495***

Uninterruptable Power Supply

The UPS system provides the user with many benefits. Its primary use is to provide power to the control in the case of a power outage. It can supply the control with power for up to 20 minutes after the main power goes out. This allows the operator to save any files that need saving and to power down the control in a controlled manner. The machine cannot be operated, only the control has reserve power. It also provides a measure of lightning and surge protection to the control. The UPS system complies with ANSI/IEEE C 62.41 A. ***$355***

Trackball

This option provides the user with the ability to move the cursor on the screen. This is an easy method of performing certain tasks, such as selecting files, turning outputs on and off in the maintenance screen, moving and resizing windows. Although the trackball can be a valuable addition, it does not completely replace use of the keyboard. ***$195***

Bar Code Input

This option includes a bar code wand which attaches to the side of the control cabinet and PC software which allows the user to create and print bar codes. The bar code functions just like a key sequence from the key board. For example, the entire key sequence needed to load a program can be scanned as a bar code much faster than it can be typed, with little possibility of error. The Bar Code Input system allows any commonly used key sequence to be printed or scanned. The software requires a 386 or higher PC, VGA and at least 2 MB of RAM and 4 MB of free hard disk space. ***$1,350***

CD ROM Drive

This option provides a CD ROM drive which is used to access data on a CD ROM such as video updates for the control or clip art libraries which are part of Router Art. It also includes upgrades to the interface control processor and additional main memory. The drive has 100Msec access time, a 120K data buffer, MPC and 1800 KB/sec data transfer rate. ***$595***

Removable Drive

The removable drive option includes a SyQuest drive which can be used to access a SyQuest cartridge to perform routine backups of your programs. The SyQuest drive provides endless capacity of memory with the 3 ounce 1.5 GB cartridges. This high technology drive was designed with an exclusive door seal that reduces the risk of contamination and the ability to remove and insert a cartridge even without power. The drive has seek time less than 12ms, a 512K data buffer and approaches a 7MB/sec. maximum data transfer rate. ***$1,450***

VCR Interface

This option provides the necessary equipment for VHS video and audio playback through the control monitor. Record setup or operating instructions for the operator to play back during setup. Includes all the electronics required and audio playback system, but does not include a VCR player. ***$1,395***

Touch Screen

This option provides the user with the ability to access information with a touch on the screen. The sensitive screen makes it possible to perform most functions directly on the screen. Although the touch screen can be a valuable and time saving addition, it does not completely replace the need for a keyboard. ***$1,250***

Hand Held Programmer

The exclusive Thermwood Hand Held Programmer provides complete programming, editing and adjusting capability right at the machine. With the Hand Held Programmer you can create programs, edit programs, adjust programs and machine settings and freely move within a program stepping both forward and backward. Even if the programs are created off line, the Hand Held Programmer makes testing and refining the program faster and easier. Once you experience the power, you will wonder why all controls don't have a Hand Held Programmer. ***$2,300***

Thermwood Probe System

Electronic probe attaches to the router spindle and is used to move all 5 machine axes. In the Point Mode, all axes are moved to a desired position and the point is entered. In the Path Mode, the actual path moved becomes the program. The Probe and the Hand Held Programmer can be used together during programming. The Probe is like power steering for the machine and greatly reduced to automatically scan a surface in three axes for mold or pattern making. The Thermwood Probe, especially when combined with the Hand Held Programmer will revolutionize five axes programming.

Probe, mounting hardware electronic interface and software. ***$14,500***

CAD Path

CAD Path generates a smooth CAD type path through points that you programmed without the need to use a complex, expensive CAD/CAM system. With CAD Path the SuperControl also no longer needs to generate a spline path "on-the-fly" during program execution, thus freeing the program from the 150 IPM limitation needed to perform a spline calculation "on-the-fly"

The CAD Path Option is now included at no extra charge on all machines.

Networking OS/2®

The Thermwood 91000 SuperControl has the capability of coexisting on Novell® Netware®, Microsoft® Peer to Peer and IBM® LAN/ Warp Server Networks. The package includes a 3Com® 16-bit combo card, client installation diskettes, OS/2® Warp Connect, and instructions for installing the client. ***$649***

Onsite installation by a Thermwood Technician is available and is priced on a machine by machine basis.

Advanced Function Language

Advanced Function Language, or AFL, is a full function, computer programming language which can be imbedded in a CNC part program. Thermwood generated macros, supplied with every machine to make extensive use of AFL. Now, customers can write programs using AFL to address a variety of specialized needs. The AFL program structure and syntax is similar to BASIC and includes commands to access all areas of the control. Using AFL, interactive intelligent programs can be generated. Parametric programs and "family of parts" programs can be changed during execution by simply inputting the new size. The Advanced Function Language is a powerful and complex technology which requires a skilled, experienced computer programmer to use.

Advanced Function Language is available to qualified customers at no additional charge. Support is also available through our Technical Services Division.

Software Programming Systems

Thermwood offers various programs designed to help the customer get the most out of their machine. Thermwood maintains a full complement of automated programming tools including three and five axis probes and a variety of two and three dimensional sign and etching and engraving software.

To receive more information on the available systems and prices contact Thermwood's Technical Services Division.

DXF Translator

Most CAD systems including popular, low cost PC based systems can output the part design in a format called "DXF". By adding certain machining information such as a start point and direction of cut, the part design as a DXF file can be fed directly to the machine control without the need of a CAM package. The DXF translator will convert the file to a CNC program.

The DXF Translator Option is now included at no extra charge on all machines.

Conventional Vacuum Pump

The Conventional Vacuum Pump provides up to 12 PSI vacuum for holding parts with conventional vacuum fixtures and seals. This pump has a 10 HP motor and generates up to 55 CFM of vacuum.

Conventional Vacuum..... $5,995

Deflashing Table

Removing flash from plastic parts can be a problem if the final part size varies from part to part. The Deflashing Table is a 30" x 30" dual table where one table "floats" on the other with a cushion of air between them. The top table is spring loaded to the center and is equipped with dampeners to prevent occelations. The cutting tool is equipped with a bearing follower which contacts the part and assures the trim matches the part size. This patented process includes a license to use the technology. **$3,140**

Gantry Lighting System

This package consist of a fluorescent light fixture mounted under the matching gantry so that it fully illuminates the table top. This lights the cutting process and is especially useful for programming at the machine. The fixture is fiberglass with a clear acrylic diffuser, fully gasketed to resist dust and moisture.

Single table lighting system $495

Dual table lighting system $695

Production Assistance

At times we are all faced with unexpected demands, important deadlines, or the loss of a trained machine programmer or operator. To help you deal with these requirements, Thermwood offers Production Assistance. This is a flexible program where Thermwood helps you produce parts using your Thermwood machine. Regardless of your reason, Thermwood can supply people who are familiar with all aspects of running production on a Thermwood machine. From programming to fixture design and construction to tooling, Thermwood can help you get the most out of your Thermwood CNC router.

Contact Thermwood's Technical Services Division for more information and pricing.

36 Inch Z Axis Stroke

This option extends the gantry legs and provides up to 36 inch of Z axis movement instead of the standard 24 inch. It is ideal for trimming thicker parts or parts which require more daylight clearance **$4,790**

Automatic Lubrication System

This system provides positive pressure, air/oil lubrication to the linear trackway bearings and the ball screws. This has two major benefits. First, it eliminates the lubrication points which must be serviced each shift (weekly and monthly lubrication points must still be serviced). Second, it provides positive pressure to the bearings preventing contamination from entering the bearing. This allows the machine to function in difficult, dusty or hostile environments.

Single Table 5' x 5' or 5' x 10' $2,500

Dual Table 5' x 5' or 5' x 10' $2,995

Automatic Tool Length Sensing

This feature provides an automatic method of measuring tool length and entering tool length offset numbers into the control. This automatically compensates for the new tool length eliminating the need to precisely locate the cutter bit. It provides a highly accurate method of adjusting tool length for pocketing or profile edges. The option consists of a sensor mounted in the back of the work table which is connected to the machine control. To adjust for the new tool length the operator calls up a measurement program which moves the heads, one at a time, over the sensor, measure the cutter and edit the tool length offset table. The operator can call the macro any time a cutter is changed. Works with metal tools only. **$950**

Optional Input Voltage

Standard machine is wired for 440 VAC, 3 Phase, 60 Hz. The following input power options are available:

208 VAC, 3 Phase, 60 Hz $2,125
220/240 VAC, 3 Phase, 60 Hz $1,995
575 VAC, 3 Phase, 60 Hz $2,250

EX-FACTORY

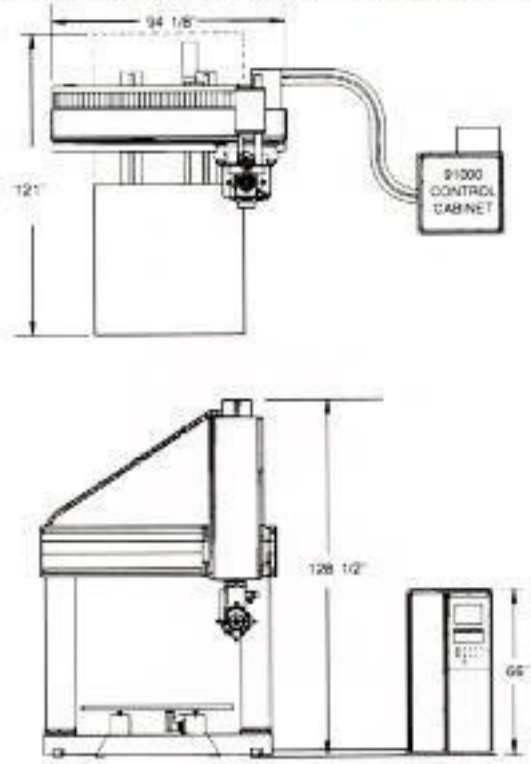
Certified Accuracy

Many CNC router manufacturers claim accuracy they can't even measure. Accuracy and repeatability can be confusing for CNC router customers. This is not so with Thermwood. Sophisticated laser measurement systems are used to measure, calibrate and verify the accuracy of every machine made. And, as a final assurance to you, the customer, the final computer printout charts of the laser measurement system are sent to you along with a certification showing that your machine met or exceeded every accuracy specification.

Model 67

Table	
Size	5' x 5', Dual 5'x 5' 5' x 10', Dual 5' x10'
Type	Moving
Number of Servo Axes	5 (X, Y, Z ,C and B)
7 HP Single End Router	Standard
Optional Tooling	
7.5 HP Dual End Router	Available
7.5 HP Heavy Duty Dual End Router	Available
8 HP Automatic Tool Change Router	Available
Air Drill	Available
Auxiliary Tool Slide	Available
Performance	
Max Feed Speed	900 IPM
Repeatability	+/- 0.005"
Utilities Required	
Electrical	440 VAC, 60Hz 220 or 575 VAC
Air	90 PSI
Base Price	
Single 5' x 5' table	**$89,950**
Singel 5' x 10' table	**$104,950**
Dual 5' x 5' table	**$109,950**
Dual 5' x 10' table	**$129,950**

Model 67 shown with a Single 5'x 5' table



Dimenions:

Single 5'x5' table 128 1/2"H x 94 1/8"W x 121"L
Single 5'x10' table 128 1/2"H x 94 1/8"W x 241"L
Dual 5'x5' tables 128 1/2"H x 122"W x 121"L
Dual 5'x10' tables 128 1/2"H x 122"W x 241"L