



When a sheet of material is needed, the gantry moves forward and lifts the top sheet using a series of vacuum cups. As the gantry moves back, it pulls the sheet onto the machine table. The operator squares up the sheet and starts the cycle.

If you want to stack machine, you can either have the gantry pick up a second sheet and pull it over the first, or, you can screw the sheets together with plastic screws and have it load both at once.

After machining, the gantry again moves forward and drops a bar in front of the machined sheet. As the gantry again moves back, the bar pushes all the machined parts off the back of the table to a sorting



table. Another sheet is loaded and the process continues.

This simple system has proven itself with years of reliable service, many times 24 hours a day, 7 days a week.

## Complete packages eliminate technical risk

Thermwood provides complete packages for nested machining of upholstered frames. We will configure a system for your unique requirements, right down to the tooling and then demonstrate this package doing your job. You can't get much safer than that.



We have extensive experience in this application, have developed much of the underlying technology ourselves and have many successful installations. We are happy to share this knowledge and experience with you.

Thermwood's FrameBuilder Series systems are available in a variety of sizes and configurations with one that is ideal for every customer.

	FB53-510	FB53-512	FB53-516	FB53-520
<b>Table Size</b>	5' x 10'	5' x 12'	5' x 16'	5' x 20'
<b>Table Type</b>	Fixed	Fixed	Fixed	Fixed
<b>Part Handling</b>				
Roller Hold Down	Standard	Standard	Standard	Standard
Automatic Load and Unload	Available	Available	Available	Available
<b>Spindle</b>				
18 HP, 3,000-18,000 RPM	Standard	Standard	Standard	Standard
<b>Tool Changer</b>				
5 Position At-The-Head- Style	Available	Available	Available	Available
<b>Auto Tool Length</b>	Available	Available	Available	Available
<b>Control Networking</b>	Standard	Standard	Standard	Standard
<b>Virtual Service</b>	Standard	Standard	Standard	Standard
<b>Hand Held Programmer</b>	Available	Available	Available	Available

**THERMWOOD**  
First in CNC Routers

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# FrameBuilder Series

Complete CNC Router Packages for Nested Machining of Upholstered Frames



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# FrameBuilder Series

## Complete CNC Router Package for Nested Machining of Upholstered Frames

These packages combine all the elements needed to machine nested upholstered frame parts from sheet stock.



With the FrameBuilder Series you can:

- Machine high production frame parts at high speed with automatic load and unload.
- Nest part files from every major CAD and design software in the CNC control for custom batch production.
- Efficiently nest and run custom jobs with improved material yield.

The FrameBuilder Series is available from Thermwood, the oldest manufacturer of CNC routers. Thousands of Thermwood CNC routers are in operation in 29 countries producing everything from simple wood parts to space probes. Thermwood has consistently been the technology leader with more U.S. patents on CNC router technology than all other CNC router manufacturers combined. The FrameBuilder Series machines offer important features not available from anyone else in the world, features important to your success.

## Roller Hold Down- the key to machining plywood

upholstered frames, present special hold-down problems. Their rough surface and tendency to warp make them difficult or impossible to hold with vacuum. In many frame applications, nests are random, so conventional vacuum fixtures cannot be used anyway. The only answer is roller hold-down, a system first developed by Thermwood.



A Roller Hold Down system is the best solution for rough and warped surfaces.

Rollers in front and behind the cutting head pinch the material to the table. It even works on stacked material and warped sheets and the surface finish is not critical, as it is with vacuum.

Others have copied this approach, but their execution omits important details. For example, everyone except Thermwood uses the linear axis bearings to carry the considerable hold-down loads. We provide a patented system that uses simple rollers under the table to counteract roller forces, eliminating the hold-down load on the critical linear bearings. With high-speed production, typical of frame machining, this means less bearing wear, longer life and fewer problems.

We also cover our rollers and provide an emergency stop strip along these covers where others don't. You are not supposed to be around the rollers when the machine is running because they can be dangerous, but why take the chance?

Others use moving table machines for roller hold-down applications. While there is nothing wrong with moving table machines (we build a lot of them), they are not nearly as efficient as fixed table machines for this particular application. The fixed table makes automatic load and unload extremely simple and straightforward. Automatic load and unload systems for moving table machines are complex at best.

When it comes to CNC routers for high volume frame production, Thermwood is clearly the leader with highly efficient systems built to operate at high speed, 24/7.

## A Great CNC control means flexibility

Once you leave the realm of high volume production and start to focus on smaller batches, flexibility becomes your most important requirement. Thermwood is the leader in this arena too.

The key to flexibility is a control that is sophisticated enough to handle all the complexities, automatically. Simple, basic controls, often promoted for frame applications, require that the programmer and operator do the complex work because the control can't. Thermwood's control, on the other hand, does much of the work for you automatically, so you don't have to.

For example, Thermwood's control does the nesting right in the control instead of requiring that parts be nested using separate nesting software and then processed through a CAM program and then developed into a CNC program using a Post Processor program. With Thermwood, simply send the designs to the control and it does the rest. The nesting, CAM work and Post Processor are all in the control and are all automatic, but the advantage of this approach is not just being simpler to use.

Suppose you encounter a defect in a sheet of material you want to use. With Thermwood's "control nesting" you simply identify the bad area and nest around it, right at the control. With others you scrap the entire sheet, or scrap the nest program, return to the office and go through the whole process again.



And what about the large pieces of material left at the end of a job. With Thermwood's FrameBuilder system, the control prints a bar code label for them. When you want to use them on a new job, simply scan the label and the control nests parts on them. With others you either scrap this material or, note the sizes, take them to the office, input these into the nest software, create new nests using these pieces, then when you are ready to run, try to locate these pieces again, identify them, get them in the required order. . . . actually, you probably just scrap them.

Thermwood's control even squares up these pieces, removing unusable protrusions and outcroppings to make them easier to handle and save. . . all automatically.

With Thermwood's control you can connect to technical service and get help, assistance and advice when you need it. The connection combines audio, visual and data through a high-tech link. You can get almost the same level of help as if the technician was right there in your shop and it is a lot quicker and easier.

## Compatibility like no other

Thermwood's control accepts DXF files from every major CAD and design program, nests them and runs them. You can even nest parts from different software in the same job. The files you want to run are simply selected, regardless of their origin, and nested together in a single job. For those who would rather do this selection process in the office, you can specify the files and quantity you want to run in an Excel spreadsheet and send this to the control. The control then accesses the files and does all the work automatically without the operator being involved.

The control does the CAM and Post Processor functions automatically and creates a nest program that you just run. In creating this program, it automatically allows for the special characteristics of roller

hold-down machining, a job you need to do if the control won't. This is truly a no hassle way to handle small batch and custom nesting jobs.

Thermwood's control also accepts Excel and CP Out files intended for panel saws, nests and runs them. Or, if you just want some rectangles, type the length and width of the pieces you want, right on the control, and it nests and cuts them. No other CNC control, from anyone, can do the things the Thermwood control does, and these things are important to your success.

## Prove your application BEFORE you buy

It is dangerous to take anyone's word they can do your job. The only way to know for sure is to see your job being done. Watch the cycle, see the result and then you truly know.



Demonstration Lab fully staffed to insure that we can do your job.

Thermwood operates a well equipped, fully staffed demonstration lab whose purpose is to demonstrate to both you and us, that we can do your job and that you will be completely satisfied. We set up, program and run your parts, with no obligation to you, to prove out the application before we receive, or accept, a commitment.

You are invited to our Southern Indiana facility to see this process in person and discuss your needs in a friendly, easy and open environment. We also have the ability to broadcast these demonstrations live over the web, although a personal visit is highly recommended. Most people that visit say they leave with a wealth of information beyond seeing their parts run. After all, we have been doing this longer than anyone else and are happy to share this experience with you.

With this approach, you know and we know it will work well. This is the only way to be sure you will be a completely satisfied customer, after all, you being satisfied is important to us because a large part of our business is repeat orders from satisfied customers.

## Automatic Load and Unload- productivity, pure and simple

Thermwood's automatic load and unload system for nested based production is simple, fast and efficient. An operation that typically requires two people can now be done by one. In fact, it is common for a single operator to run two or three Thermwood upholstered frame systems using automatic load/unload.



Using Automatic Load and Unload a single operator can run more than one upholstered frame system.

The operation starts with a scissor lift located at the front of the fixed machine table. A stack of sheet material is placed on this scissor lift and it keeps the top sheet just above the level of the machine table.