
CNC SYSTEM

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Minimal Configuration:

1. Construction Specifications (other construction specifications are available):
 - a. $\frac{3}{4}$ thick cabinet ends, bottoms, tops, shelves, partitions, stretchers and nailers.
 - b. $\frac{3}{4}$ thick drawer and rollout tray sides, sub-fronts and backs.
 - c. $\frac{1}{4}$ thick cabinet backs, drawer and rollout tray bottoms.
 - d. $\frac{3}{4}$ thick unfinished attached or detached toe kicks - to be skinned after installation.

2. Tooling Requirements:
 - a. $\frac{1}{4}$ TenonCam™ Bit - used to tenon $\frac{3}{4}$ thick material - cabinet and drawer / tray bodies.
 - b. $\frac{1}{4}$ Down Shear Bit - used to mortise for $\frac{3}{4}$ thick material and dado for $\frac{1}{4}$ thick material.
 - c. $\frac{1}{2}$ Compression Bit - used to outline (cut out) $\frac{3}{4}$, $\frac{5}{8}$, and $\frac{1}{2}$ thick material.
 - d. $\frac{3}{8}$ Down Shear Bit - used to outline and under-size (for thickness) $\frac{1}{4}$ thick material.
 - e. 5mm Drill Bit - for adjustable shelves, hinges, drawer guides and construction boring.

3. Machine Requirements:
 - a. Ten horse (or greater) router motor.
 - b. Five position tool changer - the spoil board surfacing bit can be exchanged for one of the other bits when required. However, a twelve-position tool changer is preferred.
 - c. Boring can be done one hole at a time, with the router motor, but a nine spindle (or more) multiple drilling head is preferred.

Optional Configuration (A):

1. Provide $\frac{5}{8}$ drawer and rollout tray construction:
 - a. $\frac{5}{8}$ thick drawer and rollout tray sides, sub-fronts and backs.

2. Additional Tooling Requirements:
 - a. $\frac{3}{16}$ TenonCam™ Bit - used to tenon $\frac{5}{8}$ thick material - drawer and tray bodies.
 - b. $\frac{3}{16}$ Down Shear Bit - used to mortise for $\frac{5}{8}$ thick material.

3. Additional Machine Requirements:
 - a. Two additional tool changer positions.

Optional Configuration (B):

1. Provide ½ drawer and rollout tray construction:
 - a. ½ thick drawer and rollout tray sides, sub-fronts and backs.
2. Additional Tooling Requirements:
 - a. ⅛ TenonCam™ Bit - used to tenon ½ thick material - drawer and tray bodies.
 - b. ⅛ Down Shear Bit - used to mortise for ½ thick material.
3. Additional Machine Requirements:
 - a. Two additional tool changer positions.

Optional Configuration (C):

1. Provide detached finished toe kicks. Mitered at finished ends, fronts and backs. Mortise and tenoned at concealed joints.
 - a. ¾ thick toe kick fronts, ends, backs and sleepers.
2. Additional Tooling Requirements:
 - a. 45° miter bit - single flute, carbide insert tool - used at 90° outside corners.
 - b. 22½° miter bit - single flute, carbide insert tool - used at 45° outside corners.
3. Additional Machine Requirements:
 - a. One additional tool changer position for the 45° miter bit.
 - b. One additional tool changer position for the 22½° miter bit.

Recommended Multiple Drilling Head Configuration:

1. Five (or more) gang and /or individually activated spindles in the rip axes:
 - a. 5mm x 57mm Brad Point Drills for adjustable shelf holes, hinges and drawer guide system screws.
2. Four (or more) gang and /or individually activated spindles in the cross-cut axes:
 - a. One 5mm x 70mm Through Boring Drill Bit for system screws on some partitions. This bit can also be used to bore through holes for door and drawer pulls.
 - b. One 4mm x 70mm Through Boring Drill Bit - pilot holes for construction screws.
 - c. One 35mm x 57mm Brad Point Drill Bit for hinge cup boring.
 - d. One 8mm x 57mm Brad Point Drill Bit for hinge anchor holes.

Recommended Nested Based Router Configuration:

1. At least a 10 horse router motor, but 15 is preferred.
2. Minimum 50" x 122" full coverage vacuum table, with at least four zones.
3. Pop-up pin stops to position materials. Stops should be positioned for 4' x 8' material.
4. At least a 10 horse vacuum pump, but 20 is preferred (altitude will affect vacuum – check with manufacturer).
5. Equip machine with tool touch off blocks that will automatically index tool length and spoil board surface (this will save hours when changing bits).
6. Machines with the tool changer mounted on the gantry are more accessible than those machines with the tool changer mounted to the vacuum table base. Gantry mounted tool changers don't interfere with the loading and unloading of materials on the vacuum table.
7. Median operating specifications for a typical ½ Compression Bit is around 1,000 inches per minute at 20,000 rpm. Machine speed capabilities should exceed bit specifications, however, at some point excess machine speeds become irrelevant, as the router bit can only travel so fast before it breaks.
8. Machine accuracy and repeatability are important specifications and should be +/- .001 of an inch over the entire working area of the vacuum table.
9. For panel processing, with all other specifications being similar, TenonCam™ has found no significant performance difference between the moving table and the closed moving gantry or the open moving gantry machine types.

Minimum Hardware and Software Requirements:

1. TenonCam™ CNC Machining Software and Patent Pending Tooling.
2. Intel Pentium 4 or better processor - AMD Athion 64 or better processor.
3. 2 gigabytes of RAM.
4. 512 megabyte Nvidia or ATI Video Card (OpenGL).
5. Windows® XP Professional or Windows® Vista Business - Operating System.
6. High speed Internet connection.
7. Operates in conjunction with Cabinet Vision and many other popular Software Packages.