TenonCam®

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CNC SYSTEM

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**Minimal Configuration :**

1. Construction Specifications (¾, ⅝ and ½ thick cabinet construction are all available):
   a. ¾ thick cabinet ends, bottoms, tops, shelves, partitions, stretchers and nailers.
   b. ¾ thick drawer and rollout tray sides, sub-fronts and backs.
   c. ¼ thick cabinet backs, drawer and rollout tray bottoms.
   d. ¾ thick unfinished attached or detached toe kicks - to be skinned after installation.

2. Tooling Requirements:
   a. ¼ TenonCam® bit - tenon ¾ thick material - cabinet body and drawer / tray boxes.
   b. ¼ Down Cut bit - mortise ¾ thick material and dado ¼ thick material.
   c. ½ Compression bit - outline (cut out) ¾ , ⅝ , and ½ thick material.
   d. ½ Down Cut bit - outline and under-size ¼ thick material - cut hinge cup holes.
   e. 5mm Drill bit - adjustable shelves, hinge plates, 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** (can also be used for cabinet body construction) **:**

1. Provide ⅝ drawer and rollout tray construction:
   a. ⅝ thick drawer and rollout tray sides, sub-fronts and backs.

2. Additional Tooling Requirements:
   a. 3/16 TenonCam® bit - tenon ⅝ thick material - drawer and tray bodies.
   b. 3/16 Down Cut bit - mortise ⅝ thick material.

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

**Optional Configuration - B** (can also be used for cabinet body construction) **:**

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 - tenon ½ thick material - drawer and tray bodies.
   b. ⅛ Down Cut bit - mortise ½ thick material.

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

**Optional Configuration - C** (¾, ⅝ and ½ thick toe kick construction are all available) **:**

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, hinge mounting plates and drawer guide system screws.

2. Four (or more) gang and /or individually activated spindles in the cross-cut axes:
   a. One 4mm x 70mm Thru-Hole drill bit - pilot holes for construction screws.
   b. One 5mm x 70mm Thru-Hole drill bit for system screws on some partitions.
   c. One 6mm x 70mm Thru-Hole drill bit for Tandem guide hook, pilot holes on drawer / tray sub-fronts and door / drawer pulls.
   d. One 8mm x 57mm Brad Point drill bit for hinge cup 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 two 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 the Woodworking Industries' most popular Software Packages.