

Why Every Woodworking Shop Needs A Dedicated Joinery Machine

A dedicated joinery machine is invaluable in all woodworking shops, offering numerous advantages to enhance productivity, efficiency, and in professional shops, profit. This specialized equipment is designed specifically for creating precise and repeatable joints, saving time and effort while enhancing quality and craftsmanship. Joinery can be cut using hand tools, or a combination of tablesaw and special blades and jigs, but some of these operations take valuable time to set up and some can be precarious. The tablesaw and router tables are such valuable tools for other important operations, it's best to not tie it up for a task a dedicated joinery machine can do better, faster, easier, and safer producing more accurate and repeatable joints.

A dedicated joinery machine significantly reduces the learning curve for woodworkers. While mastering the art of joinery requires time and practice, a dedicated machine expedites the process by providing carefully engineered settings and guides. This simplification enables even novice woodworkers and students to achieve professional-level joinery in minutes, boosting confidence and encouraging them to explore more elaborate design and more intricate joinery techniques.

One of the key advantages of a dedicated joinery machine is its ability to streamline the joinery process. Traditionally, woodworkers have relied on manual tools or multiple machines to achieve various joints, such as mortise and tenon, dovetail, or box joints. With a dedicated joinery machine, all these joints can be accurately cut using a single piece of equipment, eliminating the need for multiple setups, and reducing the risk of errors and inconsistencies.

Precision is another crucial benefit of a dedicated joinery machine. These machines are engineered to produce consistent and accurate joints, resulting in a tight fit and strong bond between pieces. The use of specialized templates, guides, and stops ensures each joint is cut to the exact dimensions, allowing for seamless assembly, and minimizing the need for additional adjustments or corrections.

Efficiency is a crucial factor in any woodworking shop, and a dedicated joinery machine contributes significantly to this aspect. By expediting certain aspects of the joinery process, such as depth and width adjustments or repetitive cuts, these machines save valuable time and effort. Woodworkers can focus more on the creative aspects of their projects, knowing the joinery machine will consistently produce accurate and reliable joints.

Dedicated joinery machines incorporate safety features to help protect the woodworker from potential hazards. Using a dedicated machine reduces the risk of accidents caused by human error, such as slip-ups with handheld tools or improperly secured workpieces.

With dedicated joinery machines the operator's hands are far from the spinning bit.

In conclusion, a dedicated joinery machine offers numerous advantages that enhance the woodworking process. Its ability to streamline joinery tasks, provide precision and consistency, reduce the learning curve, improve efficiency, and promote safety make it an indispensable tool in any woodworking shop. By investing in a dedicated joinery machine, woodworkers can elevate their craftsmanship, complete projects more efficiently, and ultimately achieve higher levels of personal and customer satisfaction.

There are three full-featured, dedicated joinery machines available today; the PantoRouter®, the Multi-Router® and the Router Boss®. Each of these machines operates differently but all do the same basic woodworking joinery tasks and more.

This comparison does not include the Festool Domino since the Domino only makes mortises of limited sizes for slip tenons. Integral mortise and tenons are 2.7 times stronger than Dominos according to a test done for Fine Woodworking Magazine (Issue 203), which is the reason most furniture is not assembled with Dominos. Dominos work great for cabinetry, but that's not the focus of this comparison.

Dedicated Joinery Machine Comparison at a Glance			
	PantoRouter®	Multi-Router®	Router Boss®
3-Axis control with two hands	Yes	No	No
Router moves to workpiece	Yes	No	Yes
Effective dust collection	Superior dust control	Moderately effective and dust-laden air used for router cooling	Moderately effective and two hoses required
Bit change without removing router from mount	Yes	No	No
Workpiece auto-centering	Yes	No	No
Mortise and tenon templates	150+ sizes included	26 sizes at additional cost	No
Box joint templates	Fixed or variably spaced included	Fixed space only	No
Dovetail templates	Fixed or variably spaced included	Fixed space only	No
Pneumatic clamps available	Yes	Yes	No
Long workpiece operations	Yes	Challenging	Difficult
Cost	\$2399 Includes router, carbide bits, clamps, centering jigs and fences and all templates	\$2999 Not including router, bits, templates, or clamps	\$1029 Not including router, bits, or accessories

A more detailed comparison of these three machines follows.

Detailed Comparison			
	PantoRouter®	Multi-Router®	Router Boss®
X, Y & Z Axis Operation	Two levers control X, Y and Z axis with 2:1 mechanical advantage.	Three levers control X, Y and Z-axis but only two can be operated at a time.	Hand crank for X-axis, manual move for Y-axis and router's plunge control for Z-axis operated one at a time.
Router/Workpiece Movement	The router is mounted on a carriage that is moved to the workpiece. The workpiece is secured to the table using fixed or rotating clamps. Long, angled and compound-angled workpieces are easily supported.	The workpiece is clamped to a relatively small table then the table is moved to the router (Z-axis) then back and forth (X-axis). Long or angled workpieces are awkward.	The router moves to the workpiece, which is held underneath the relatively small table. The Router Boss® is mounted on a wall so workpiece size is limited. Tenons on the ends of long boards are problematic.
Dust collection	The PantoRouter® dust collection is nearly 100% effective. The dust and chips are drawn away from the router and work zone. The dust hood is hinged for easy access to the router collet for fast bit changes.	The router is mounted in a box connected to the dust collection system. Dust-laden air is drawn over the router and some is circulated into the router body for cooling. There is no dust hood, so collection efficiency is limited.	Two external dust ports are positioned to gather shavings. Two vacuums or hoses must be connected.
Bit Changes	The hinged dust hood allows nearly instant access to the router collet for bit changes. The router does not need to be removed from mounts, so it stays precisely aligned.	The router must be removed from the router mount and the dust collection box to change bits. Maintaining precision using the factory supplied router mounts is often challenging.	The router must be removed from the router mount for bit changes. Slight variation in router location is not uncommon.

	PantoRouter®	Multi-Router®	Router Boss®
Centering the Workpiece	The PantoRouter® uses a patented auto-centering system for the Y-axis. Simply raise the template holder, rest your workpiece on the thickness gauge, drop the holder down and lock to precisely find Y-axis center. X-axis centering uses a built-in ½ scale fence so finding both X and Y-axis centers takes under a minute.	The Multi-Router® has no auto-centering system so the workpiece is measured and some math applied to find and set the stops to center.	The Router Boss® also has no auto-centering system so measuring and math are required to find and position to center.
Mortise and Tenon	Over 150 sizes from ¾” – 6¼” wide with both horizontal and vertical templates included. Cut both mortise and tenon use a single setup of the same template. The patented tapered templates make a precise fit fast and easy.	26 sizes of templates are available from ¾” – 3” wide available at additional cost for the Multi-Router®. Stops can be used to cut both mortise and tenon. Mortise cuts are much easier than tenon cuts, but both are tedious to set up.	The Router Boss® uses stops set for mortise and tenon. Each operation is a separate process and both require measuring and math. Cutting tenons is relatively slow and it’s not as easy to see the bit as with the other two machines since the workpiece is mounted under the table.

	PantoRouter®	Multi-Router®	Router Boss®
Box Joints	<p>Templates to make ¼”, ½”, ¾” and 1” box joints are included with the PantoRouter®. These can be mounted in either fixed or variably-spaced arrays. Box joints of any size can also be cut using a very simple setup described in our How-To Guide.</p>	<p>The Multi-Router® has a fixed-space ¼” and ⅜” box joint template available separately at additional cost.</p>	<p>Box joints on the Router Boss® are a matter of much math and measuring. Each pin is a separate setup.</p>
Dovetails	<p>The PantoRouter® comes with a set of 8° dovetail templates to cut either fixed or variably spaced dovetails. The same template array and a single set up is used to cut both pins and tails. It takes under three minutes to set up the templates and the fit can be fine-tuned with the workpiece still mounted.</p>	<p>Dovetail templates are sold at additional cost for the Multi-Router®. It makes 14° and can only be arranged in a fixed space array.</p> <p>A dedicated template must be used to cut each half of the joint, requiring a template change between pins and tails.</p> <p>A test board of tails must be made to test the fit or the workpiece must be removed to test with the actual tails board.</p>	<p>Dovetails on the Router Boss® are complicated, requiring much math and measuring since it doesn’t use templates. The dovetails can be any angle or size, but each has a different set up and very different measurements.</p>

	PantoRouter®	Multi-Router®	Router Boss®
Convenience	<p>The PantoRouter® is fast, easy to set up and the pantograph operates with a 2:1 mechanical advantage over the bit. This enhances safe operation and precise control over the router, even with a climb cut and gnarly knots and grain.</p> <p>Since the pantograph allows the router and bit to move far beyond the workpiece, a carving motion makes light cuts around the perimeter of a tenon cut possible rather than plunging into the workpiece.</p>	<p>Three levers on the Multi-Router® can be operated only two at a time. A heavy workpiece clamped to the moving table sliding to the router then back and forth is sometimes precarious, especially with large, angled or compound-angled designs.</p> <p>The table is much smaller than the PantoRouter® and clamping positions and reference fence locations are limited.</p>	<p>The Router Boss® is designed to be mounted on a wall and since the length of the workpiece is limited by the height of the machine, wall space in many shops might be a challenge.</p> <p>Setting the workpiece requires kneeling or stooping under the table to align each board. The bit viewing window is relatively small and seeing reference lines is not as easy as other machines.</p>