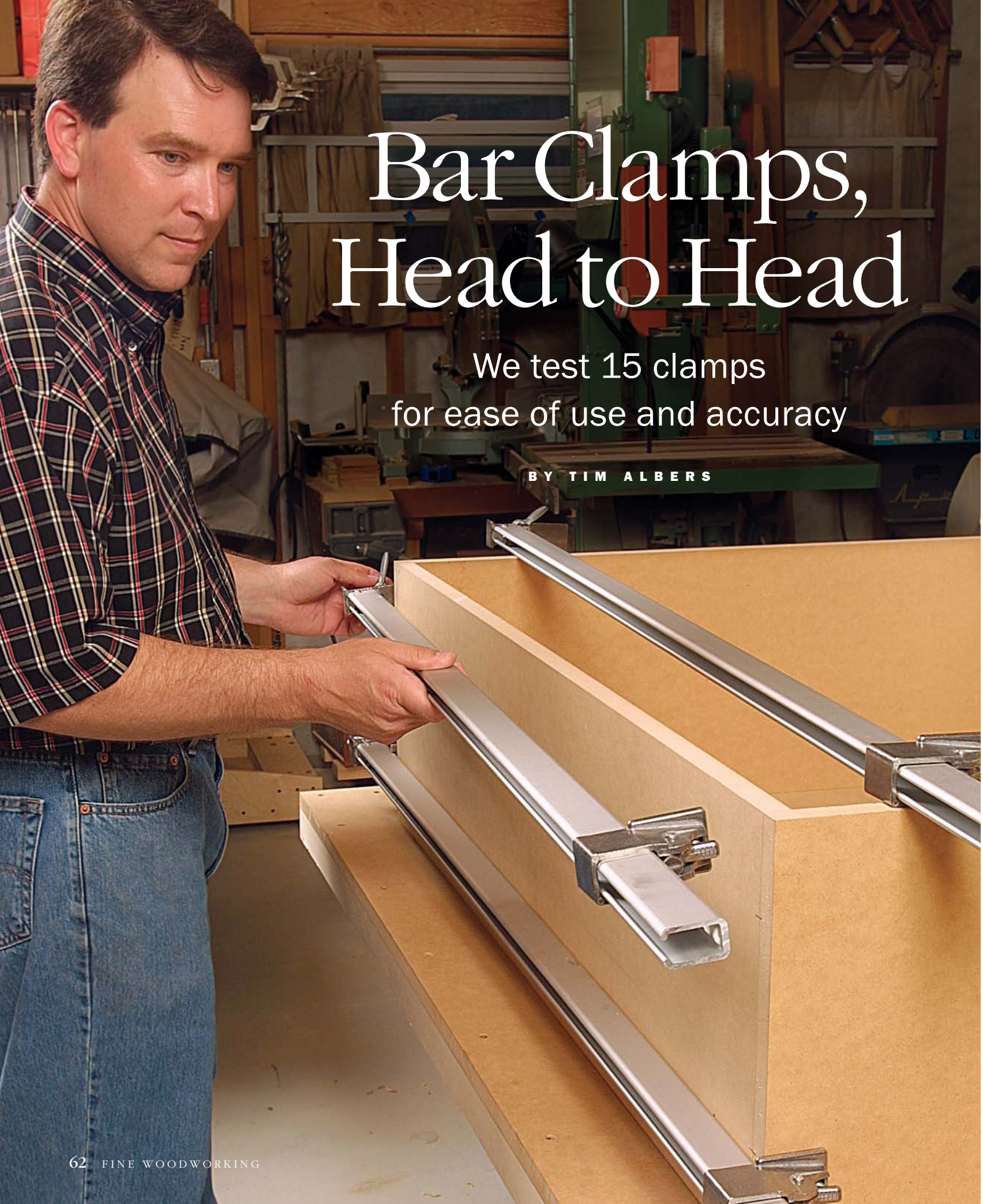


Bar Clamps, Head to Head

We test 15 clamps for ease of use and accuracy

BY TIM ALBERS

Most woodworkers would list the tablesaw, the bandsaw, or the router as the most important tool in the shop. In fact, most woodworkers start out by purchasing one of these tools. Yet the predominant tool in the workshop actually is the bar clamp, which is used in almost every facet of cabinetmaking and furniture construction.

While a single clamp may not be a large investment—prices range from $15 to $50—a full set of clamps can cost as much as a tablesaw. And the investment is a critical one, because having the right clamp for a particular glue-up can be the difference between success and failure.

Although the bar clamp is seemingly basic, the variety of styles and features can cause even the most experienced woodworkers to scratch their heads. I surveyed the major tool catalogs and Web sites and found that bar clamps fall into four major categories—pipe, parallel jaw, aluminum bar, and steel bar—with each type being a bit better at one task or another. So, after testing all of the clamps, I selected some of the best and put together my recommendations for a basic set, which includes representatives from several categories.

For all models, I tested the 48-in. version, a standard size. First, I built a testing fixture (below) to measure the deflection in both the bar and the jaws when applying various levels of force. I used 600 lb. of force as a standard setting, which would be enough to clamp 3 sq. in. of joint area with most hardwoods. Then I used a set of four of each type of clamp to assemble a simple, medium-density fiberboard (MDF) carcase (joined with biscuits) and a large poplar panel, looking at ease of use and the resulting flatness and squareness of the finished product.

Tim Albers is a woodworker and machine refurbisher in Ventura, Calif.

PIPE CLAMPS

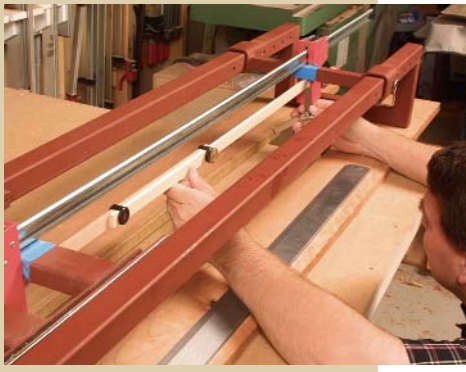
PARALLEL JAW CLAMPS

ALUMINUM BAR CLAMPS

STEEL BAR CLAMPS

CLAMP TESTER

Albers built a steel testing rack that uses a scale to indicate clamp force. He tested each clamp for flex (left) and the resulting deflection of the clamp jaws (below), as well as the amount of force that could be comfortably applied by hand.



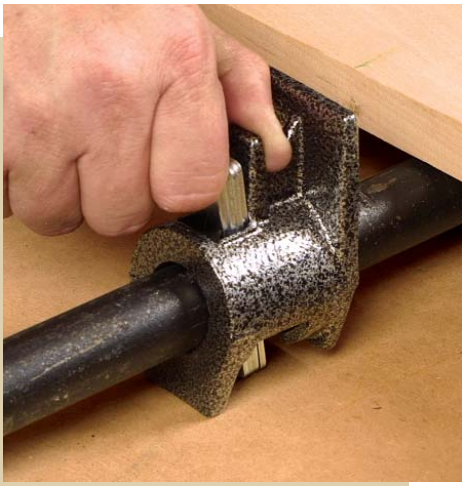
Photos, except where noted: Rodney Diaz; facing page and this page (bottom row): Asa Christiana

PIPE CLAMPS

Largely unchanged for 75 years, pipe clamps are versatile and inexpensive workhorses. They are sold as clamp fixtures for use with either ¾-in.- or ½-in.-dia. steel pipe, which is inexpensive and can be cut to any length. I reviewed the heavier-duty ¾-in. fixtures.

A certain amount of play is necessary to allow the tail fixture to slide freely on the pipe, and on all of the pipe clamps, this play resulted in the tail jaw being racked back to an angle greater than 90° when pressure was applied. On all models the multiple-disk clutch mechanism in the tail fixture gripped the pipe solidly. All of the clamps caused the carcase sides to bow under normal pressure, though clamping pads or cauls would correct this. When clamping flat panels, all of the clamps caused significant cupping. I was able to reduce cupping by alternating the clamps above and below the panel.

As an inexpensive extralong clamp, nothing compares to the pipe clamp. You can have a few sets of fixtures and buy multiple lengths of pipe. Of the models surveyed, the Jorgensen and Rockler clamps offered the least amount of deflection. I named the Rockler Best Overall because of its wider, more stable base and ample clearance for its screw handle.



Columbian/Wilton's tail problem. *When used on a benchtop, the tail on this pipe clamp is very difficult to disengage. Albers had to reach under the clamp to unlock the clutch plates.*

COLUMBIAN (soon to be Wilton)

www.jettools.com; 800-519-7381

Price $13

Screw travel 2¼ in.

Jaw deflection Significant

Jaw squareness Poor

Comments Manufactured by WMH and soon to be sold under the Wilton name, this is a close copy of the Jorgensen pipe clamp (below), but its fit and finish were not at the same level, and it didn't operate smoothly. Similar to the Jorgensen, clearance between the screw handle and the workbench can be an issue.

IRWIN NO. 224134

www.irwin.com; 800-464-7946

Price $13

Screw travel 2¼ in.

Jaw deflection Minimal

Jaw squareness Poor

Comments The Irwin's head assembly attaches to the pipe by means of a clutch mechanism, as opposed to screwing onto the end of the pipe. While this allows the use of unthreaded pipe, the entire head fixture spun when I tightened the screw. Also, the plated screws didn't operate freely, likely contributing to the spinning head.

JORGENSEN NO. 50

www.adjustableclamp.com; 312-666-0640

Price $13

Screw travel 2 in.

Jaw deflection Minimal

Jaw squareness Fair

Comments The Jorgensen's jaws exhibited the least deflection of the models tested, and the screws on this clamp and on the Rockler (right) were the smoothest. While the clamp does have a small foot that holds it in an upright position on a workbench, there is very little clearance between the screw handle and the bench.

ROCKLER SURE-FOOT PIPE CLAMP

www.rockler.com; 800-279-4441

Price $15; $48 for four clamps

Screw travel 2¼ in.

Jaw deflection Minimal

Jaw squareness Fair

AUTHOR'S BEST OVERALL CHOICE

Comments The Rockler clamp is similar to the Jorgensen model (left), but it has a much larger base, which keeps the clamp upright and far enough above a workbench to allow for ample room to turn the screw crank. Another unique feature is the small lip on the underside of the base, which makes the clamp easy to hang and store on a simple shopmade rack.

Photo, this page (top): Asa Christiana

PARALLEL JAW CLAMPS

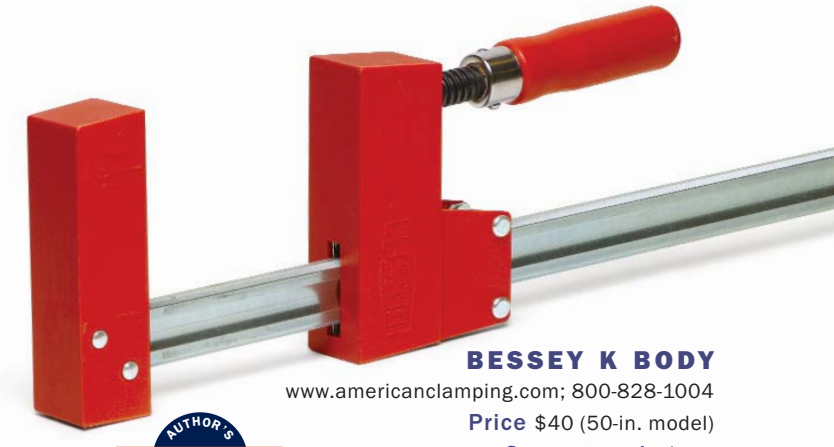
The newest additions to the clamp market, these bar clamps are commonly referred to as parallel jaw clamps because they are designed to keep the clamp jaws parallel to each other when pressure is applied. The Bessey K Body, from American Clamping, was the first such clamp on the market—about 15 years ago. Within the last few years, both Gross Stabil and Adjustable Clamp have begun selling similar models.

The clamp jaws on all three models showed far more accuracy—over a much longer jaw—than any of the other types of bar clamps. All three models have steel jaws covered in plastic, which resists glue and is non-marring if kept clean. Another unique feature on all three models is a removable head that can be reversed to convert the clamp into a spreader for pushing apart joints.

However, while all three models have cylindrical wood handles that are comfortable and compact, they make it more difficult to apply heavy pressure when needed. This can mean more clamps are required to glue up large or thick panels. Also, their weight—only steel bar clamps are heavier—can be a factor when many clamps are used on large assemblies. It's also important to note that these clamps cost two or three times more than the other types.

I would pick the Bessey or Gross Stabil models for my shop, but I gave the top grade to the Bessey clamps on the basis of price.

Parallel clamps offer long, accurate jaws. *For some glue-ups, this means fewer clamps are necessary to apply even pressure along the glue joints.*



AUTHOR'S BEST OVERALL CHOICE

BESSEY K BODY

www.americanclamping.com; 800-828-1004
Price $40 (50-in. model)
Screw travel 1⅛ in.
Bar flex/Jaw deflection Minimal
Jaw squareness Excellent

JORGENSEN CABINET MASTER NO. 8048

www.adjustableclamp.com; 312-666-0640
Price $40
Screw travel 1⅛ in.
Bar flex/Jaw deflection Moderate
Jaw squareness Excellent

GROSS STABIL PC2

www.grossstabil.com; 800-671-0838
Price $45
Screw travel 1¾ in.
Bar flex/Jaw deflection Minimal
Jaw squareness Excellent

COMMENTS It was hard to pick a favorite from among this group. All of the clamps were capable of assembling a cabinet carcase or flat panel with little, if any, cupping. On the testing jig, the Bessey and Gross Stabil clamps showed less bar flex and jaw deflection than the Jorgensen clamp, but in all cases this was minimal. My only minor complaint about the Jorgensen Cabinet Master is that the sliding jaw occasionally did not engage and grip the bar, but a simple jiggle of the handle usually took care of the problem.

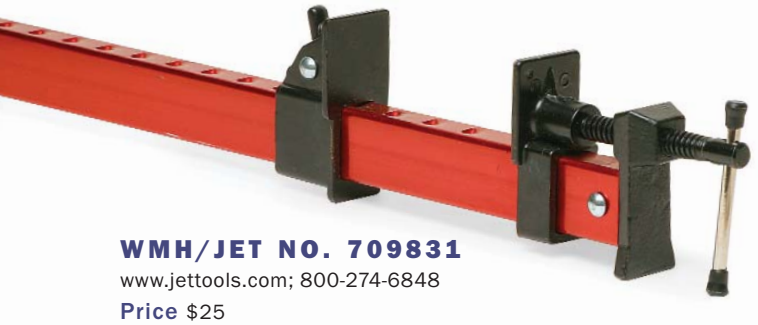
Photo, this page (bottom left): Asa Christiana

ALUMINUM BAR CLAMPS

Aluminum bar clamps are built around a U-shaped aluminum extrusion. The head fixture is permanently attached to one end, and the tail fixture slides along the length of the clamp, locking into shallow notches. It's immediately noticeable on these clamps how much lighter they are than any of the other types, which can be a real plus on a large project that must be moved or a small glue-up that could be pulled out of whack by heavy clamps.

The Universal and Rockler models stood out among this group. They exhibited acceptable bar flex and jaw deflection and did a better job of gluing up a flat panel than the other two. The clamp handles on the Rockler and Universal caused less fatigue than the Jet and Jorgensen models. I slightly preferred the simple handle and the closer notch spacing on the Universal.

The Jet aluminum bar had too much flex. *Because the extrusion on the Jet clamp is thinner than the other models in this group, it showed an unsatisfactory amount of bar flex and jaw deflection under normal working conditions.*



WMH/JET NO. 709831

www.jettools.com; 800-274-6848

Price $25

Screw travel 1½ in.

Positive stops Every 1 in.

Bar flex/jaw deflection Severe

Jaw squareness Very good

Comments The Jet clamp allowed an unacceptable amount of bar flex and deflection in the clamp jaws. After about six tests, the Jet clamp became bent permanently, and the notches for the tail fixture were distorted. Last, I found that occasionally the clamp head would bind on the bar when tightened.

JORGENSEN NO. 3548

www.adjustableclamp.com; 312-666-0640

Price $25

Screw travel 1½ in.

Positive stops Every 1 in.

Bar flex/jaw deflection Significant

Jaw squareness Very good

Comments The Jorgensen clamp offers adjustment notches with 1-in. spacing and a small base similar to the Universal. The screw has a thin sliding handle that was hard on the fingers and didn't allow as much pressure to be applied as the handles on the Rockler and Universal models. Also, the screws on the Jorgensen didn't travel as smoothly as the others.

ROCKLER SURE-FOOT

www.rockler.com; 800-279-4441

Price $24; $87 for four clamps

Screw travel 1¾ in.

Positive stops Every 1 in.

Bar flex/jaw deflection Minimal

Jaw squareness Excellent

Comments The Rockler clamp uses an extrusion almost identical to the Universal model except that the notches are spaced farther apart. Both the head and tail assemblies on the Rockler feature large, stable bases on the workbench. Also, the head assembly features a large, convenient crank handle. A 48-in. extension kit is available for $19.

UNIVERSAL

www.highlandhardware.com; 800-241-6748

Price $27

Screw travel 1½ in.

Positive stops Every ⅝ in.

Bar flex/jaw deflection Minimal

Jaw squareness Excellent

Comments At 3 lb., this is the lightest of any of the other aluminum bar clamps I looked at. The screw handle is a compact wing shape yet offers a solid and comfortable grip. Another nice feature on the Universal is that the notches for locking the tail jaw are spaced only ⅝ in. apart, the closest of any models, meaning less adjustment of the screw mechanism.

AUTHOR'S BEST OVERALL CHOICE

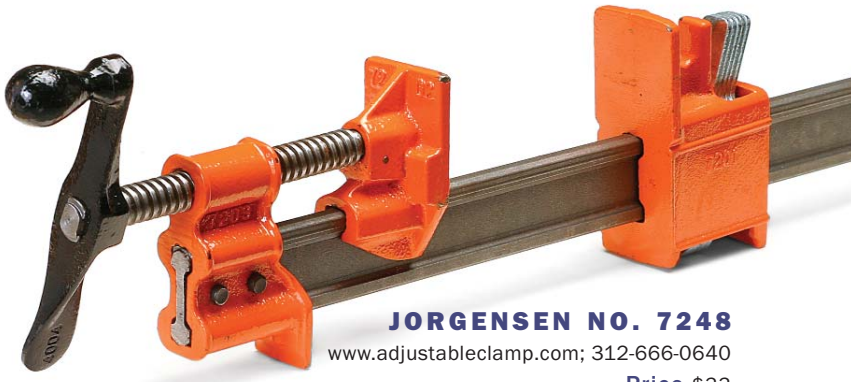
Photo, this page (top): Asa Christiana

Steel bar clamps have inaccurate jaws. *On all models, the jaws tended to push the box sides inward (above), creating poor glue joints.*

STEEL BAR CLAMPS

These are the heavyweights of the clamping world. With stiff bars and large crank handles, steel bar clamps can apply significant pressure with negligible bar flex and jaw deflection. In fact, the Jorgensen and Wetzler models were able to max out the 2,000-lb. limit of my testing fixture. However, with their great strength and large handles, it is very easy to apply too much pressure to a joint, starving it of glue and causing unnecessary distortion in the assembly. The problem of excessive force is compounded by the fact that all of the jaws are canted inward at an angle significantly less than 90°. All of the models produced acceptable results when assembling a flat panel but tended to deflect and bow the sides of the MDF carcase. In general, these very heavy clamps make large assemblies unwieldy. Basically, they are overkill for most applications.

The Jorgensen I-Beam clamp got top honors in this category for its ease of use, strength, and stability on a workbench.



JORGENSEN NO. 7248

www.adjustableclamp.com; 312-666-0640

Price $33

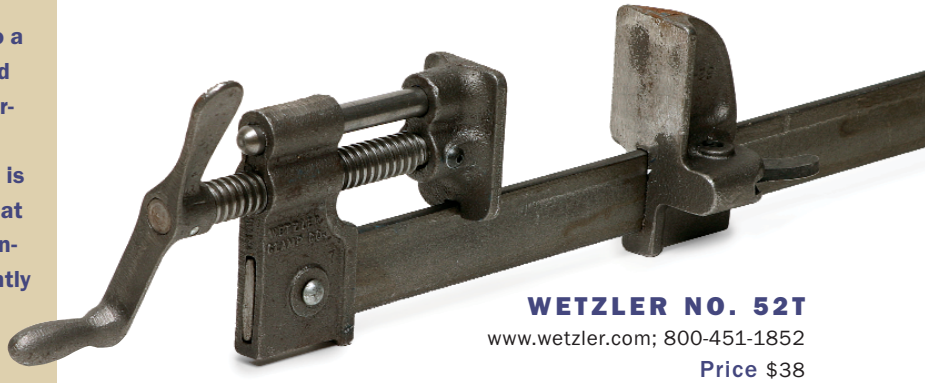
Screw travel 3 in.

Positive stops None; clutch mechanism

Bar flex/jaw deflection Not measurable

Jaw squareness Poor

Comments This clamp uses a heavy I-beam with a sliding tail assembly that engages with a multiple-disk clutch mechanism. The tail slid easily on the bar and provided a very positive grip. The T-handle and screw are stout, but there is very little clearance when turning the handle over a workbench.



WETZLER NO. 52T

www.wetzler.com; 800-451-1852

Price $38

Screw travel 3 in.

Positive stops None; cam mechanism

Bar flex/jaw deflection Minimal

Jaw squareness Poor

Comments The head fixture has an alignment pin that helps keep the jaw perpendicular. However, the tail jaw tilts forward, like the jaws on the other steel bar clamps.There was little clearance for the Wetzler's T-handle above a workbench, and the base was not stable.

WMH/WILTON NOTCHED-BAR CLAMP (I-BEAM)

www.supplymscdirect.com; 800-645-7270

Price $43

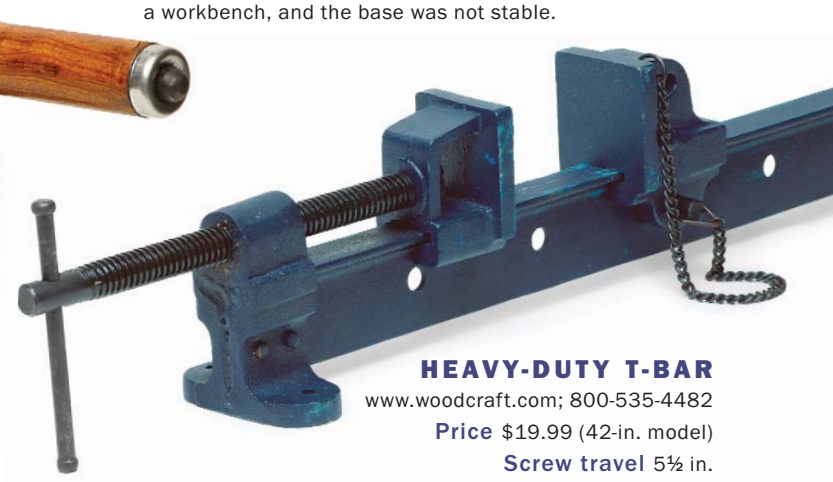
Screw travel 5 in.

Positive stops Every ¾ in.

Bar flex/jaw deflection Minimal

Jaw squareness Poor

Comments The tail assembly on this model locks onto the bar via a spring-loaded lever that engages small notches spaced closely on the bar, making it one of the fastest to adjust and tighten. However, the offset handle shape tended to twist the clamp on the workpiece and bumped into the workbench.



HEAVY-DUTY T-BAR

www.woodcraft.com; 800-535-4482

Price $19.99 (42-in. model)

Screw travel 5½ in.

Positive stops Every 3 in.

Bar flex/jaw deflection Minimal

Jaw squareness Fair

Comments The tail assembly attaches to the bar with a removable pin. While simple to use, the positive stops are 3 in. apart, meaning a lot more turning of the screw. On the other hand, its two jaws came closest to 90°, and its wide base provided solid footing.

Photo, this page (top left): Asa Christiana

The right clamp for the job

MODEL	WEIGHT	RIGIDITY	JAW SQUARENESS	BEST USES	MAXIMUM FORCE	COMMENTS
¾-IN. PIPE CLAMPS	Medium	Very good	Fair	Long clamping chores	1,200 lb.	Offers versatility and value but lacks precision
PARALLEL JAW CLAMPS	Medium	Very good	Excellent	Almost all applications	600 lb.	Limited force can mean more clamps, more weight, and more expense
ALUMINUM BAR CLAMPS	Light	Very good	Very good	Cabinet carcases, large and small	800 lb.	Good combination of lightweight, strength, and accuracy
STEEL BAR CLAMPS	Heavy	Excellent	Poor	Large panels	2,000+ lb.	Great strength, but weight and crooked jaws limit usefulness

CONCLUSIONS

The overall winner among all clamp types is the parallel clamp, and those would be the first ones I'd buy for general woodworking. Yes, they are the most expensive, but they're strong and versatile, outperforming all of the other models I tested. If I could choose more than one clamp, I would complement a basic set of the parallel clamps with either the Universal or Rockler aluminum bar clamps. These clamps worked very well when assembling carcases, and their strength-to-weight ratio made them real winners. For the occasional extralong clamping chore, you can't beat a set of Jorgensen or Rockler pipe-clamp fixtures. And if I were building boats or doing other large-scale work, or gluing up a lot of large panels in which the clamping pressure is distributed over a large area, a set of four Jorgensen or Wetzler steel bar clamps would be indispensable.

AN ESSENTIAL KIT

If I were just starting out and looking to purchase an essential kit of bar clamps, I'd purchase six or eight 40-in. or 48-in. parallel clamps to handle the lion's share of work. I would add sets of four aluminum bar clamps each in both the 24-in. and 48-in. sizes, to complement the parallel clamps when gluing up cabinet carcases. Last, I'd get a few sets of ¾-in. pipe-clamp fixtures for their versatility. This kit will set you back about $500 but should handle most clamping situations.