TOOL TEST

Laser

Handheld laser measuring tools are more affordable than ever, but are they accurate enough to replace a tape measure?

BY KIT CAMP

A tape measure is an uncomplicated tool that performs a simple job well. So when *Fine Homebuilding* asked me to try out laser measures, I felt like a kid pretending to be Han Solo. The word *laser* still conjures futuristic imagery for me. I certainly wasn't convinced that a laser measure might someday replace my tape measure. But after a few months of working with these tools on a day-to-day basis, I feel like I have been living in the dark ages without one.

What they're good for, and what they're not

Efficiency is crucial for a solo finish carpenter like me, and when it comes to efficiency, these laser measures are a godsend. If you bought this tool for estimating, it would pay for itself in no time. It doesn't matter if you are making a materials list for trim, cabinetry, drywall, or exterior siding. Laser measures let you do the job more accurately, and more quickly. They excel in awkward and inconvenient situations, too. No more sliding a tape measure under a sofa or needing someone else to hold the other end. No more open-reel tapes for extralong measurements, either; the lowest-range tool I looked at can still measure distances up to 150 ft.

But these tools go beyond estimating. Squaring a foundation, laying out wall plates, or measuring between rim boards to find a joist length can be done with less hassle. Even the simplest crown-molding jobs used to involve moving a ladder multiple times with corresponding trips up and down while trying to keep the tape from collapsing or hanging up

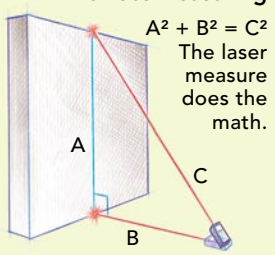
Buyer's guide

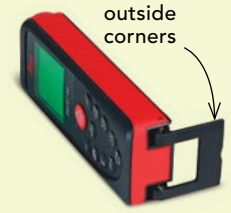
I tested laser measures costing less than $400, and all the tools included an impressive range of functions.

Linear measuring is the main function of these tools, but each model also calculates square footage and volume. Most feature an indirect measurement function, which uses Pythagorean geometry (drawing right) to measure distances with a blocked sightline or no solid target surface. All the tools can measure from both their front and rear edges, and most have a flip-out extension that allows measuring from tight inside corners or restricted spaces (photo top right), and a hook on the rear for measuring from outside corners (photo bottom right). Although memory capacity varies, each tool has the ability to store measurements, add and subtract consecutive measurements, and add and subtract against a constant measurement. Most models also perform continuous measurements, which allows you to move the tool toward or away from a target while the changing distance is shown on the screen.

Several of the tools also allow users to find the minimum or maximum distance from a fixed point, useful if you need to find the shortest or longest distance between two uneven surfaces. But as with any tool, one person's must-have feature can be another person's least-important. It all depends on what you do and how you like to do it. In my experience testing these tools as a trim carpenter, there are a few important features to look for in a laser measure.

Indirect measuring





Drawing: Dan Thornton. Photo above: Charles Bickford.

Measures

Leica Disto D3

www.leica-geosystems.com
Range: up to 328 ft.
Accuracy: ± 1⁄16 in.
Memory: 20 measurements
$350

The best tool I tested, the D3 has every feature I could want, plus some I would never have thought to ask for. It has the second-longest range in this field of tools, as well as a 20-measurement memory, the most of any tool I looked at. A built-in sensor illuminates the display in low light, so measuring from dark corners is no problem. The D3 also has a tilt sensor that identifies the angle of measurement anywhere from 0° to 45°—a nice feature for stairbuilders. It can check corner angles and find minimum and maximum measurements. Even with all these features, it is still the most compact after the Disto D2.

CST/Berger LT-160

www.cstberger.com
Range: up to 197 ft.
Accuracy: ± 1⁄16 in.
Memory: 10 measurements
$195

New to the market, this tool has a lot of nice features for the money. It is as compact as the Leica Disto D3, with intuitive controls and a combination hook and corner probe identical to those on the Leica units. The LT-160 has a stakeout function that allowed me to mark out equidistant points from a fixed starting position. It also has the same timer function I found so useful on the Leica models. Although it doesn't have the long range of some larger units, this tool should handle any normal carpentry task with ease. This is a solid performer at an excellent price.

Accuracy. The first thing I would look for is the highest stated accuracy I could afford. All the tools here other than the Craftsman are accurate to within 1⁄16 in. over their maximum distance, more than adequate for any carpentry task. There are less accurate (and less expensive) models; they would be fine if you are just estimating.

Display in inches. I prefer tools with the option of displaying measurements in inches only, rather than just feet and inches. To me, it reduces the chance of error in my cutlists. Ideally, these measurements should be displayed in fraction form down to 32nds of an inch.

Auto tallying. All the tools I tested have an add/subtract function that allows you to tally measurements; it's a great feature when you need to figure out how many linear feet of baseboard you need for a job. But this operation can mean a lot of button pushing. Better tools add up measurements automatically.

Memory. Much of my work involves installing trim, so I use a cutlist to minimize trips to the saw. To help save me time, I like a tool with a large memory that allows me to store and recall as many individual measurements as possible, and recall them in order.

Timers. The timer function is nice because it provides a delay between pressing the button and the taking of a measurement. In an awkward position, you don't have to hold the tool and try to press the button at the same time.

Size. If this tool is going to stand a chance against a tape measure, it has to fit easily in a tool belt so that it's on hand when you need it.

Stakeout function. If you often have to mark repeated measurements, like fence posts, anchor bolts, or studs on 16-in. centers, this function can be set to beep at specific intervals as you move toward a target.

as I extended it toward a corner. Now I just climb the ladder and push a button.

Don't throw out your tape measure yet, though. These tools don't do short measurements (6 in. and under) or measure from outside to outside corners (not without two people, at least). They also can't be used to mark the length of a rafter or a piece of baseboard before cutting. And although manufacturers claim that the AA or AAA batteries in these tools will last up to 10,000 measurements, that's a limitation that I will never have to worry about with my trusty tape.

One of the best things about these sophisticated tools, though, is how simple they are to use. For basic measuring operations, there is a short learning curve. You just set the tool where you want to measure from and press a button to activate the laser beam. Once you verify that the laser is hitting where you want the measurement taken to, you push the button again, wait for the beep or click, and you're done.

Best of all, the measurements produced are as accurate, if not more so, than the measurements I get with a tape measure. I frequently measure to 32nds of an inch, and although measurements that accurate are interpretive with a tape measure, a laser is dead-on. In fact, I got tight-fitting coped joints in both crown and baseboard using measurements from every tool in this review.

Built for the job site

It's nerve-racking to buy a highly accurate tool like a laser measure knowing that it will share the same shelf space as your circular saw and nail guns. Don't worry, though. These tools are all highly water resistant and dustproof, and seem durably built. All the tools tested spent a good amount of time in the back of my work truck and showed no ill effects. Still, I recommend storing a laser measure in a hard, padded case. □

Kit Camp is a finish carpenter in San Diego, Calif. Photos by Krysta S. Doerfler, except where noted.

FineHomebuilding.com

These laser measures have more features and uses than we can describe here. Look for the Magazine Extras section on our home page to see video demonstrations of these additional features.

Craftsman AccuTrac

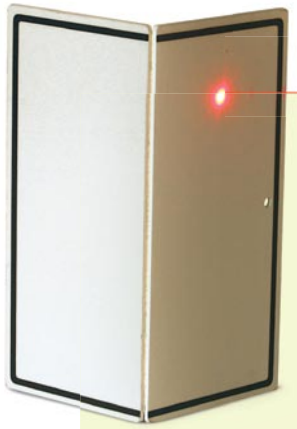
www.craftsman.com
Range: up to 150 ft.
Accuracy: ± 3/16 in.
Memory: 10 measurements
$119

The Craftsman has all the basic features needed to be a good tool and is the most user-friendly to operate. It has the lowest stated accuracy and shortest range of any tool tested, but the measurements it produced in my tests were actually a bit more accurate than stated on the box. Still, I would prefer a unit that can get closer to 1/16-in. accuracy, especially as distances get longer. The Craftsman displays only in feet and inches, rather than just inches, a pet peeve of mine. Also, this tool seems unnecessarily bulky.

Hilti PD 40

www.hilti.com
Range: up to 656 ft.
Accuracy: ± 1/16 in.
Memory: Last 3 measurements
$329

The PD 40 has by far the longest range of any tool I tested. It has fewer features than many of the other similarly priced models but performs its functions admirably. One thing I like about the Hilti is its cumulative-distance feature, which automatically adds each measurement to the last. For estimating finish-carpentry tasks, it can't be beat. It doesn't have a memory function, but it displays the last three measurements. The Hilti is also the only tool I tested with a lifetime warranty. Hilti also offers a basic model, the PD 4 ($200), which focuses on simple distance and continuous-measuring functions.



Enhanced visibility and accuracy. *A reflective target plate ($12; www.boschtools.com) is helpful when measuring over long distances or in bright light.*

Tips for accurate measuring

If you're like me, you will be skeptical of laser measures for a while and will double-check everything with your tape. In fact, I suggest you do this just to make sure the tool is functioning properly. It won't be long before you trust the results. Here are a few things I've learned that help to achieve more accurate measurements.

Calibrate your tape. Lasers don't replace tape measures altogether. You still need to transfer a measurement to a piece of wood before making a cut. So take the time to make sure that your tape measure is consistent with your laser measure, and adjust the hook on the tape as needed.

Aim for solid targets. Measuring to porous, highly reflective, translucent, or water-covered surfaces can be difficult. This issue isn't a function of quality; it's just the nature of the laser. If you're measuring distances greater than 100 ft., most manufacturers suggest using a target to reflect the beam. Targets can be purchased, or you can use a light-colored, flat surface such as a piece of white paper.

Know the environment. These tools work by bouncing a beam of light off a fixed object to determine the distance between the tar-

Photo left, facing page: Charles Bickford

Leica Disto D2

www.leica-geosystems.com
Range: up to 197 ft.
Accuracy: ± 1⁄16 in.
Memory: 10 measurements
$229

This full-feature model is the most compact and can be easily carried in a tool belt. It has every feature I would shop for at this price, such as indirect stakeout and minimum/maximum measurements. The controls were intuitive, and the tool displays measurements in fractions down to 1⁄32 in. I also really like this model's flip-out hook for outside corners, though its use was limited by the hook's compact size. The timer function gave me a generous six-second delay between pressing the button and taking a measurement. Although the range is shorter than on other tools, I don't find myself measuring over 200 ft. often.

Stabila LE-50

www.stabila.com
Range: up to 328 ft.
Accuracy: ± 1⁄16 in.
Memory: 19 measurements
$275

I like Stabila's laser measure a lot because it combines a good balance of accuracy, range, and ease of use. For my work habits, the 19-measurement history is invaluable. The beam on the LE-50 is different from those found on most competitive models because it can be locked in the on position, allowing me to take a series of quick measurements without waiting to locate the beam each time. It lacks some of the wow features on other tools, but I think it's a solid value from a company known for accurate, dependable tools. It is also the only tool tested that comes in a hard-shell, padded case, something other manufacturers should make standard on these sensitive, pricey tools.

Trimble HD50
Bosch DLR165

www.trimble.com
www.boschtools.com
Range: up to 165 ft.
Accuracy: ± 1⁄16 in.
Memory: see text
$169/$118

The Trimble and Bosch tools are identical, so I am grouping them together. Although easy to use and priced attractively, these tools lack a few refinements I'd like to see. They don't have the same type of memory function as the other tools. They add or subtract only consecutive measurements, and they can't store a series of individual measurements. Measurements display only in feet and inches. If I had to choose between the two models, I would opt for the Bosch because of its lower price, but both models are a solid value, certainly better than no laser at all.

get and the base unit. But light conditions and dust in the air can affect the range and accuracy of the measurements. Ideally, the target should be shaded from bright light.

Hold it steady. These tools excel at taking measurements in positions that would be awkward to negotiate with a tape measure, but if the tool doesn't remain steady against a flat surface, the results can be inaccurate. When I had a hard time holding the laser measure steady and pressing the button at the same time, the tools with a timer really helped (see "Buyer's Guide," pp. 68-69).

Supplement outside corners. Although some tools feature a hook for this application, the hook is relatively small and really good only for latching onto surfaces that are smooth, flat, and square, such as the edge of a countertop. If you need accurate measurements from a drywall or plaster corner, hold something flat (such as a scrap of wood or a piece of drywall) against the wall to butt the tool against.

More accurate outside corners. *A scrap of wood or drywall held flat against the wall makes an accurate outside-corner measuring surface.*

A NOTE ABOUT LASER SAFETY

All these tools are class-2 lasers. In layman's terms, this means that your blink reflex will prevent the laser from causing permanent damage should you accidentally direct the beam into your eye. Still, all manufacturers explicitly state that lasers are never to be pointed into the eye. Please carefully read the safety warnings that come with the tool you choose.