

# TOOLS OF THE HOME INSPECTOR

by Walter Jowers

*Use these diagnostic gadgets to find hidden problems without cutting holes or marring finishes*

Like a general physical exam, a prepurchase home inspection is a noninvasive procedure. We inspectors try to identify problems without cutting into the house. The tools we use for this would also be useful to any builder or remodeler. Some of these gadgets are just the thing for checking the quality of subcontractors' work before writing that final check, while others are liability limiters. (In this litigious

age, you'd better be able to prove that you tested for every known hazard.) If you're doing a remodeling estimate, these noninvasive tools can help you check conditions without the trouble and expense of tearing into the house. After ten years in the inspection business, here are some of my favorite tools. (To get more information on the products mentioned in this article, see the manufacturer's list at the end.)

## Flashlights

Even if I quit the inspection biz tomorrow, I would want at least one of these flashlights. My everyday flashlight is a Streamlight rechargeable (see Figure 1). It weighs one pound — much less than a battery-eating flashlight — while its 1-inch-diameter body is narrow enough to fit in a pocket of my blue jeans. It throws enough light for attics and basements, but isn't too blinding for close-up work like looking under sinks. It's also rugged — I've dropped my trusty Streamlight more than a few times with no ill effects. I get about a week's work out of the light before I recharge it.



**Figure 1.** The lightweight Streamlight is a must-have if you use a flashlight every day. It's rechargeable and will take more abuse than a standard flashlight.



**Figure 2.** This LSI rechargeable spotlight generates a 250,000-candlepower beam — visible for half a mile.

When I come home Friday afternoon, I drop it into a wall-mounted charger. It's fully recharged by Saturday morning, but it doesn't hurt to leave it in the charger until Monday, which is what I usually do. I've only noticed one problem: The two metal contacts on the light that connect it to the charger are *hot* when the light comes out of the charger — not enough to burn you, but enough to make you drop the light. Fortunately, the contacts cool off in a few seconds.

For deep, dark crawlspaces, however, I prefer my LSI Cordless Rechargeable Spotlight (Figure 2). It comes in 250,000- and 500,000-candlepower models; I use the smaller

model, and I wouldn't want a brighter light. (I had a customer who said he used one of these lights to check on his livestock at night, without leaving the house.) A crawlspace light has to be tough enough to lean on as you crawl. Early in my inspection career, I squashed a few 6-volt plastic flashlights. I've had my LSI spotlight about two years, during which I've crawled with it, dropped it, and accidentally allowed it to roll around in the back of my truck. So far I haven't even changed a bulb. As with the Streamlight, I get about a week's worth of work out of the LSI spotlight before I have to charge it up over the weekend. The spotlight is too heavy for all-around use: It's about the size of a small saucepan, so there's no sticking it in your pocket. The LSI is my "mud" light; it stays in the truck until it's time to go into the crawlspace.

The Streamlight costs about \$100, the LSI spotlight about \$80. I ordered spare bulbs when I ordered the lights, because I know I'll need them one day.

### Moisture Meters

There are moisture meters aplenty, but nearly all of them have probes that make little holes in the surface being tested. These moisture meters start at about \$50, and they're fine if you're testing for leaks in a crawlspace, where nobody cares about pinholes in the sub-floor. But for tidy indoor work, there's no substitute for the Tramex Moisture Encounter (Figure 3). Its mois-



**Figure 3.** The Tramex Moisture Encounter costs \$300, but can pay for itself the first time it finds a hidden plumbing leak. Because the sensors are wrapped in rubber pads, they won't mar finish surfaces.

ture-detecting sensors are contained in two rubber pads that won't mar wood, drywall, or plaster. It's easy to use: After placing it on a known dry spot to find the background moisture, I just move it toward any suspicious spots. I use my Moisture Encounter every day, and it has found many active plumbing and roofing leaks that I couldn't have detected by touch. There are three sensitivity settings — one for wood, one for felt roofing, and another for plaster and brick.

The Moisture Encounter is also a wonderful show-and-tell device. Customers can stand in the living room and watch the meter move as I close in on a leak. The only drawback I've found is that the side-mounted on/off switch tends to get pushed to the on position in

my tool bag, draining the 9-volt battery. The Moisture Encounter costs \$300. That's cheaper than having to come back and fix a leak you weren't aware of.

### Circuit Testers

If every electrician here in Nashville checked his work with an Etcon outlet/GFCI tester, my inspection reports would be a lot shorter (Figure 4). This \$20 tool plugs into a standard 120-volt outlet to check polarity and ground, as well as into a GFCI to determine if it will trip when a ground fault occurs. As far as I can tell, the thing is virtually indestructible.



**Figure 4.** The inexpensive Etcon outlet tester not only checks GFCIs, but will also indicate improper wiring in standard receptacles.

For a more thorough test of 120-volt outlets, I use a SureTest Branch Circuit Analyzer (Figure 5). Like my trusty Etcon, this gadget checks ground and polarity, but it also does a whole lot more. The SureTest determines the quality of the ground by checking the impedance. (High impedance is a sign of poor grounding.) And unlike the Etcon, the SureTest will pinpoint a "bootleg" ground. This dangerous fault occurs when the neutral is shorted or connected to the ground wire, energizing the ground wire.

The SureTest will also give a digital readout of voltage drop at any outlet when a 15- or 20-amp load is applied to the outlet. I find a lot of outlets where the



**Figure 5.** The SureTest Branch Circuit Analyzer checks for proper circuit polarity, as well as determining the quality of a ground connection. It can locate false grounds, where the neutral and ground wires are shorted, and will measure the voltage drop at any outlet.

voltage drop exceeds the NEC's limit of 5%, which increases the chance that the wiring will overheat. In many older installations, the bathroom outlets are protected by a single GFCI mounted in the garage. The voltage drop in these circuits can be as much as 20%. Of course, these bathroom outlets are the very ones that will have hair dryers plugged into them, so the chance of overheated wires is high. The SureTest analyzer can also be left plugged in for hours or days to record voltage spikes that can wreak havoc with computers and office machines.

Finally, the analyzer will perform a thorough test of a GFCI outlet, simulating a ground fault by setting up a voltage difference between the hot and neutral wires. The voltage difference reads out on the digital display, measured in one-milliamp increments. A GFCI should trip with about a 6- to 8-milliamp current difference. If it trips with only a 3-milliamp difference, nuisance trips will be likely. If the GFCI trips with a 12-milliamp dif-



**Figure 6.** The Circuit Pup Breaker Finder helps you figure out which breaker controls which outlet. A transmitter plugs into an outlet, and a receiver traces the signal anywhere along the branch back to the panel. The device can be used on live or dead circuits.

ference, it might not provide enough protection against ground faults. The SureTest Branch Circuit Analyzer costs about \$300.

### Breaker Finder

Etcon's Circuit Pup Breaker Finder has a transmitter that plugs into an outlet, and a receiver that beeps and lights up when you zero in on the breaker that controls that outlet (Figure 6). It can be used on live or dead circuits. The Pup is handy for us home inspectors, because we're not supposed to activate dead circuits or kill live ones. But it's also useful when you're tearing into a wall and need to shut off a circuit to move an outlet. Because the receiver will beep anywhere along the wire run to the transmitter, the Pup is useful for tracing wires between the outlet and the breaker. The Circuit Pup costs about \$175.

### Gas Sniffers

Gas sniffers isolate leaks of combustible gases like natural gas and propane; some can even detect the presence



**Figure 7.** The Leak-Tec Combustible Gas Tracer is useful for finding natural gas leaks.

of carbon monoxide, which might indicate a cracked furnace heat exchanger. The problem is that accurate, professional-quality gas detectors are very expensive. (More than a few gas utility companies don't even have them.) I work with another home inspector, and we decided to buy two different types of gas detectors so we could do side-by-side comparisons. I bought a Leak-Tec CG (Combustible Gas) Tracer, which will indicate the presence of any number of gases, including natural gas and carbon monoxide (Figure 7). But the CG Tracer doesn't differentiate between these gases or any of the other dozens of gases it detects (including fumes from laundry soap).

My associate bought a G526 carbon monoxide detector from Macurco (Figure 8). His device has interchangeable sensor heads that differentiate between natural gas and carbon monoxide. Each of us paid about \$350 for our sniffer. After our side-by-side comparison, I'd give a slight edge to his carbon monoxide detector, because it differentiates between gases and is rechargeable. Neither sniffer gives a readout of how much gas it's measuring.



**Figure 8.** Macurco's G526 carbon monoxide detector has interchangeable heads. One sniffs for carbon monoxide; the other sniffs for combustible gases.



These sniffers are useful only for screening tests; that is, they can only warn of a condition that should be further investigated. If one of our sniffers indicates the presence of any gas, we can only tell customers to contact the local gas utility for follow-up tests.

### Miscellaneous Gadgets

I'm almost ashamed to admit that I own one of Pure Rubber Products' Tub Stoppers (Figure 9). It can't cost more than a nickel to make, and it sells for \$20. But I need the thing. The best noninvasive way to test a shower pan is to plug the drain, run a couple of inches of water onto the shower floor, and see if any leaks show up over the next few minutes. I used to carry a piece of rubber roofing around to plug the shower drain, but I had to stand there and watch the pan fill up, or risk forgetting about the shower and causing a flood. A center tube in the Tub Stopper lets the water drain out when it gets about 2 inches high, so I can check other things in the bathroom while the shower's running. I don't think of the Tub Stopper as an overpriced piece of rubber — I think of it as cheap insurance.

Knee pads (Figure 10) are also a must in my business. Pads are available from contractor supply houses, and you can find them at any sporting goods store that serves rollerbladers. A decent set of knee pads costs



**Figure 9.** The Tub Stopper lets you test a shower pan for leaks without worrying about a flood — the hole in the center allows for overflow.



PORTABLE PRODUCTS/ST. PAUL, MN

**Figure 10.** Don't forget kneepads — they're a must when it comes to inspecting crawlspaces.

about \$20. If you buy them from a sporting goods store, you should also pick up some elbow pads for crawling around in gravel-floored crawlspaces.

If you go into crawlspaces, coveralls are also important. You can buy cheap polyester or poly/cotton coveralls just about anywhere, but working in polyester is like working in a plastic bag. In ten years, the only source I've found for good-quality cotton coveralls is Sears' Work Clothes catalog. Expect to pay \$30 to \$40.

### Sources

Except for the Sears coveralls, all of these tools are available from Professional Equipment Company (130 Dale St., West Babylon, NY 11704; 800/334-9291). Professional Equipment offers a 30-day free trial of all tools, has good telephone technical support, and doubles the length of all manufacturer's warranties. ■

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## For More Information

American Gas & Chemical  
220 Pegasus Ave.  
Northvale, NJ 07647  
201/767-7300  
*Leak-Tec Combustible Gas Tracer*

Black Hawk Sales  
1893 Coyote Cir.  
Golden, CO 80403  
303/582-3538  
*Tramex Moisture Encounter*

Etcon Corp.  
7750 S. Grant St.  
Burr Ridge, IL 60521  
708/325-6100  
*Outlet/GFCI Tester, Circuit Pup*

Industrial Commercial Electronics  
P.O. Box 456  
Buffalo, NY 14225  
800/442-3462  
*SureTest Branch Circuit Analyzer*

Lectro Science  
6410 W. Ridge Rd.  
Erie, PA 16506  
800/345-6487  
*LSI Cordless Rechargeable Spotlight*

Macurco  
3946 S. Mariposa St.  
Englewood, CO 80110  
303/781-4062  
*G526 Carbon Monoxide Detector*

Pure Rubber Products  
7 Ray Place  
Fairfield, NJ 07004  
201/575-0212  
*Tub Stopper*

Streamlight Inc.  
130 W. Germantown Pike  
Norristown, PA 19404  
610/631-0600  
*Streamlight*