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Editor in Chief, WOOD magazine

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Buying a router: need you go pro?

What's the real difference between a router costing \$100 and another costing twice that? The answer might surprise you.

Shopping for a router at the home center, you see two router kits side by side: Both boast plunge and fixed bases, 2 horses under the hood, 1/2" and 1/4" collets, similar features, and lengthy warranties. Yet one sells for \$99 and the other for \$240. There must be *some* difference between the machines, but should you *pay* the difference? That depends on how—and how much—you'll use that tool.

The class system for power tools: DIY and pro

Power-tool manufacturers typically design, build, and market their machines to suit one of two types of users: the do-it-yourself (DIY) user or the professional. (See "What Kind of Router User Are You?" at *right*.) Both have different needs and place different demands on their tools.

For example, the DIY user may have less experience with power tools (this may be his first router), so such ergonomic touches as large soft-grip handles and a trigger-style power switch give him confidence to operate the tool safely and effectively while growing his skills. Function trumps finesse for this user with depth-setting systems that operate intuitively, sometimes at the sacrifice of fine adjustability. The DIYer uses the tool less frequently, for shorter periods of time, and is more likely to replace the router than repair it, so serviceability means less to him.

The pro, on the other hand, may use the tool all day, every day and is more concerned with power, performance, and precision than ergonomics. In fact, a pro may not use the handles at all, opting to grip the tool around the motor if that best suits the job at the time. He's also more inclined to perform routine maintenance,

so the router design he chooses should promote ease of self-service with such features as externally replaceable motor brushes.

Although those profiles appear to be black-and-white, in truth there are many "grey" users. For instance, an up-and-coming woodworker may buy a pro router because he doesn't want to mess with buying a step-up router later. And we've seen DIY-level routers in pro shops (typically dedicated to a specific occasional task) alongside the pro routers assigned to tougher daily assignments.



We chopped up two perfectly good routers in our quest to learn the differences between low-dough and top-price routers.

Pro routers outperform DIY when the heat is on

You can't judge a router by its outward appearance, so we went undercover to see what separates DIY and pro routers, disassembling and cutting away 2-hp routers from Bosch and Skil (both manufactured by the Robert Bosch Tool Company). After tearing into the tools, we showed them to Lance Stonehocker, the top router service technician at Puckett Tools & Equipment, a local Skil/Bosch authorized service center.

WHAT KIND OF ROUTER USER ARE YOU?	
DIY	Professional
<ul style="list-style-type: none"> Self-trained and buys tools as needed for projects. 	<ul style="list-style-type: none"> Earns a living with tools, and needs to have high-quality tools at hand.
<ul style="list-style-type: none"> Less informed about what is available in the market. 	<ul style="list-style-type: none"> Choice of brand reflects years of experience and expectations of quality and precision.
<ul style="list-style-type: none"> Likely to buy tools from home center or mass retailer. 	<ul style="list-style-type: none"> Likely to buy from specialty tool store, catalog, or online.
<ul style="list-style-type: none"> Uses a router for short bursts of activity (5–10 minutes at a time). 	<ul style="list-style-type: none"> Turns a router on and leaves it on for 30 minutes or more at a time.
<ul style="list-style-type: none"> Uses a router occasionally, perhaps once or twice a month. 	<ul style="list-style-type: none"> Uses a router regularly, more than once a week.
<ul style="list-style-type: none"> When router fails, is likely to replace it with another router. 	<ul style="list-style-type: none"> More likely to repair a router than replace it.
<ul style="list-style-type: none"> Low price and ease-of-use are top priorities. 	<ul style="list-style-type: none"> Precision, power, and durability are top priorities.

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Stonehocker says a router's number one enemy is heat, which shortens the life of the motor and bearings. The photos, *right*, show how differences in the bearings and armature assemblies of the Skil (DIY) and Bosch (pro) machines impact their heat resistance.

■ **Motor armature:** The armature is the part of the motor that spins, turning the shaft and the collet that holds the bit. The large surface area of Bosch's long narrow armature heats slower and cools faster than the short squat armature on the Skil. It also reduces deflection of the shaft when there's a heavy side load on the bit (such as when routing edge treatments).

■ **Bearings:** Big shielded bearings on both ends of the Bosch armature run cooler and protect the bearings from dust penetration and loss of lubrication better than the smaller sealed bearings on the Skil.

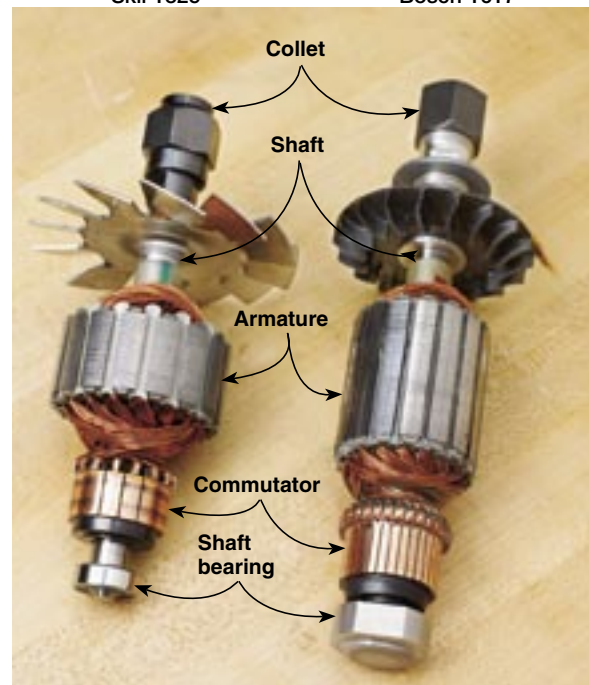
■ **Motor housing.** Bosch's aluminum motor housing acts like a heat sink, drawing heat away from the motor. Skil's plastic housing acts more like an insulator, trapping heat inside the router.

Stonehocker says that the Skil router probably should not be operated full throttle for more than 20 minutes at a time due to motor-damaging heat build-up. And it should be allowed to cool for at least 20 minutes before using it again. The Bosch router, he says, could probably run 60 minutes continuously before heat begins to take its toll. It's ready to get back to work in only 10–15 minutes. He speculates that under identical working conditions, the Bosch motor would last two to three times as long as the Skil.



Skil 1825

Bosch 1617



Skil's small shaft bearing heats up faster than Bosch's larger bearing, making it less durable. In a similar fashion, Bosch's 32-segment commutator runs cooler than the 16-segment commutator on the Skil router and allows it to better withstand overload conditions without failure.

SO, WHAT DOES ALL THIS MEAN TO YOU?

First off, from the outside of the tool, it's hard to tell a DIY router from a pro model. Price and brand name are your best indicators: Black & Decker, Craftsman, Ryobi, and Skil represent the DIY category, while Bosch, Craftsman Professional, DeWalt, Hitachi, Makita, Milwaukee, and Porter-Cable typically build to pro standards.

If you honestly assess yourself using the user profiles shown in the chart, you may find that you can save money by buying a DIY router, and still have a tool that will last your lifetime. Or you may

discover that your level of usage warrants spending the extra money on a pro-level router, with bigger savings over the long haul.

At the prices of most DIY-level routers, we think that most woodworkers will benefit from having both kinds in their shop: Keep a pro-level tool on hand for the toughest routing tasks, and a DIY model or two dedicated to specific bits or tasks. The time savings alone from not having to change and set up bits quickly makes up for the extra money you'll spend. ♣

