

## Testing Lab

### Mix Masters -- Standing Mixers

from the Episode: *Strawberry Cream Cake*

*KitchenAid has dominated the standing-mixer market for decades, but can it cream a new batch of competitors with 1,000-watt motors, cavernous bowls, and lofty price tags?*

*This updates a previous [article](#) from the May, 1996 issue. For related information, see [Hand-held Mixers](#) and [English Cake Mixer](#).*

For dedicated home bakers, choosing a standing mixer used to be a piece of cake. You strolled down the KitchenAid aisle; you selected a size. The competition? Mostly glorified eggbeaters mounted on stands--fine for whipping cream and stirring cake batter but pretty much useless for heavier tasks involving cookie dough or bread.

Recently, though, numerous high-end models have whirred onto the scene to give KitchenAid a run for its money. Most have raised the stakes with huge bowl sizes and seriously ramped-up wattage. While KitchenAid's largest mixer is 6 quarts (most are 5), now 7 quarts and larger aren't uncommon. KitchenAid's basic model runs on a 250-watt motor; the new models tout ratings of 700, 800, even 1,000 watts! Naturally, prices have soared. Hobart--a maker of industrial-grade mixers--has rolled out a new 5-quart consumer model priced at a cool \$1,500 and change.

How much mixer does a home cook need? To test the field thoroughly, we bought 18 different mixers of every shape, size, and price--from a budget \$100 model up to the \$1,500 Hobart. Our lineup included Bosch (two models), DeLonghi (two), Electrolux, Farberware, Hamilton Beach (two), Hobart, Jenn-Air, KitchenAid (four), Sunbeam (two), and Viking (two).

#### A Baker's Dozen

Standing mixers should be able to beat egg whites, whip cream, incorporate butter and sugar ("creaming"), mix stiff cookie dough, and knead basic bread dough. I started with a test that would quickly thin the ranks: 15 minutes of medium-duty kneading on a rustic bread dough. (If all you need a mixer to do is beat egg whites and stir cake mix, you're better off spending \$70 on a good hand-held mixer instead.) Any mixer that couldn't finish the job was out of the running. Hacking, screeching, shuddering, even pausing--all fine, so long as the resulting dough was acceptable and the mixer survived.

First up was the Jenn-Air Attrezzi, a smart, stylish number that huffed and puffed its way through the first few minutes of kneading, then hacked flour out of its sleekly contoured etched-glass bowl. As smoke wafted from the motor, I reconfirmed the fire extinguisher's proximity but resisted pulling the plug. After 3:50, the motor stalled and never started again. Next, the diminutive KitchenAid Classic wheezed and trembled through the exercise, but 15 minutes later both mixer and dough were fine. The \$1,500 Hobart whirred calmly from start to finish. And so it went--for 18 rounds.

All in all, these mixers were truly a noisy, convulsive lot. But only six failed outright, either stalling out irreversibly or leaving portions of dough unincorporated: Bosch Solitaire (\$899.99; the cheaper Universal model survived), Farberware (\$99.99), Hamilton Beach 5-Quart (\$349.95; the 7-quart survived), Jenn-Air (\$349.00), and both Sunbeams (\$98.95, \$129.99). Just 12 mixers, then, would advance to the remaining rounds.

#### Design Matters

For the next several weeks, the triumphant dozen tried their luck in a variety of mixer challenges: kneading pizza dough, mixing cookie dough, whipping cream, and beating egg whites. In the end, we developed clear mixer-design criteria.

First, there's mixing motion. The two most common are stationary beaters (with rotating bowl) and "planetary action," when a single beater rotates on its axis while spinning around a stationary bowl (similar to the way a planet moves around the sun). Planetary action proved far superior--the agitator simply makes it to more areas of the bowl. Three stationary models (Farberware, both Sunbeams) choked on dough in the elimination round: Either the bowl stopped moving or the beaters got too clogged to rotate. Another stationary-style mixer, albeit a more unusual design, the Electrolux DLX-2000 (\$469.95) has a rotating bowl and all its inherent problems (ingredients get clogged on the agitator while the bowl spins ineffectually). One mixer opted for another approach entirely. Shaped like a food processor, the Bosch Universal (\$369.99) has an agitator that rotates on a spindle. The Bosch wasn't bad at kneading, but when creaming and whipping, its tendency to fling ingredients to the sides rather than integrate them in the middle proved detrimental to the final consistency.

Second, forget cavernous bowls. Unless you regularly make multiple loaves of bread, 5 to 6 quarts is plenty. To accommodate the extra volume, DeLonghi, Hamilton Beach, and Viking built the bowls of their 7-quart models up, not out: The resulting urns are nearly impossible to scrape down without dirtying a shirt sleeve, and small amounts (think two egg whites) get lost in the depths.

We also prefer slightly squat bowls, which compensate for the lost height with a more spacious bottom surface and by flaring out to a wider mouth. By distributing ingredients lower and wider, these models had less opportunity to fling the contents up the sides beyond the beater's effective range of motion. The net result? Less need to scrape. The other advantage of shallower distribution--coupled with a wider paddle (more leverage)--is less work by the motor. The 5-quart mixers by DeLonghi and Viking have squatter, flared bowls, while the 6-quart KitchenAid Professional 600 made up for straight sides with the most spacious bottom surface of any planetary-action mixer in the lineup.

Most mixers come with three attachments: a dough hook (for kneading), a paddle-shaped flat beater (creaming dry and wet ingredients), and a wire whisk (whipping). The minor differences from model to model aren't worth reporting, with a few exceptions. First, most flat paddles are, in fact, flat. The exceptions were the DeLonghi and Viking paddles (5-quart models only), which feature slightly bent-out edges, a three-dimensional touch that proved remarkably effective for creaming. If only the Viking could keep its slick-shaped beaters locked securely in the socket: With both Viking models we tested, the dough-caked attachments constantly plunged into the bowl during scraping sessions, thanks to a

poorly designed locking mechanism and the disproportionate weight of the attachments themselves.

Finally, the DeLonghi, Hamilton Beach, and Viking mixers earned extra credit for an ingenious method of adjusting beater clearance. Each attachment can be lengthened or shortened by turning a washer near the top. With the KitchenAids, only the mixer arm can be adjusted, making it a pain for cooks who prefer closer bowl contact with one attachment than with the others.

#### **Power Games**

If I hadn't included the Hobart in the lineup, I might never have discovered the sneaky truth behind wattage ratings. Most mixers list their power in watts; Hobart is the only one to use horsepower. When I learned that 1/6 HP equals a mere 124 watts, I scratched my head in puzzlement. How could this quiet, powerful workhorse have the lowest wattage rating in such a hacking, shuddering group (from 250 watts to 1,000 watts)? Turns out Hobart is the only mixer to list output power rather than input power. What's the difference? Output wattage is the amount of power the motor actually produces--which flows out of the motor, moves through the mixer arm, and, ultimately, smacks the ingredients around. Every other mixer lists input wattage, which is simply the power that flows from the electrical outlet into the mixer's motor.

What does input wattage tell you about the power of a mixer? Absolutely nothing--it's purely a marketing gimmick. To wit, the six models that failed the bread dough test (our initial round) had power ratings ranging from low to high, mostly high (275, 350, 400, 450, 700, 700). In addition, every other test showed absolutely no correlation between mixer performance and wattage. (If manufacturers were willing to provide output wattage figures, comparison would be easy, but this key bit of data is never offered.)

#### **The Dye Is Cast**

Beyond output power, it was clear that design was crucial to successful mixing. For a better measure of a mixer's efficiency, then, I devised a final test. Mixing 4 cups of pizza dough in each bowl, I added 10 drops of yellow food coloring to one side of the dough and 10 drops of blue to the other. How long would each mixer take to knead the dough completely to a uniform green color--with no individual specks of yellow or blue?

Incorporation times varied significantly. The slowest mixer had gone from speckled blue and yellow to a uniform green in just over 11 minutes. The quickest? A speedy 3:45. From fastest to slowest: KitchenAid Professional 600 (3:45), Bosch Universal (4:45), DeLonghi 7 (5:03), Hobart (5:30), Viking 5 (5:30), DeLonghi 5 (5:33), Hamilton Beach (5:39), Viking 7 (6:30), KitchenAid Artisan (7:20), KitchenAid Accolade (7:42), KitchenAid Classic (8:52), and Electrolux (11:15). And wattage? Clearly unrelated.

So is KitchenAid still the mixer to beat? Yes. Three mixers survived the gauntlet of tests without showing fatal flaws: the KitchenAid Professional 600 (\$369.99), the 5-quart DeLonghi (\$349.95), and the Hobart (\$1,503.08). Given that \$1,500 is far beyond most test cooks' budgets, the kitchen was split down the middle between the KitchenAid and the DeLonghi, but our test results give a slight edge to the KitchenAid.