

# Choosing a Lavatory Faucet

Before you're sold on style alone, consider how the faucet is made, the type of valve it uses and the finish

by Andrew Wormer

**H**ere's a shocker: The bathroom faucets in my house don't look like the ones in catalogs. Theirs are gleaming, germ-free, untarnished and unsullied. My bathroom faucets are usually covered with smudges, toothpaste gunk, soap scum and whatever else sloughs off my kids, and the faucets are usually left dripping.

The lavatory faucets at my parents' house, on the other hand, look a great deal more like the ones in the catalogs. And theirs never drip. The deal is, however, that their kids are grown, so their daily routine takes in a lot less grime than mine.

Clearly, there should be different faucets for different lifestyles. Mine should be made of titanium and contain a self-washing mechanism, like a self-cleaning oven, that clicks on every night at bedtime. Every morning, my faucets would be radiant. Until the kids woke up.

Unfortunately, if you're a parent who's in the market for a lavatory faucet, the self-cleaning type exists only in your head. There are lots of other options out there, though. You'll want to consider the type of handles—lever or traditional, depending on the strength of the hands turning the tap—the finish, the basic material it's made of and the price.

**Solid brass forms the best faucet**—Whatever their ultimate finish on the outside, the best faucets are solid brass on the inside. Brass is an alloy that's more or less composed of zinc and copper with small amounts of other materials such as lead. Brass is durable and corrosion-resistant, and it can be machined to close tolerances. Forged and machined brass components typically have smoother surfaces and lower lead content than cast brass, which is more porous and prone to pinhole leaks.



Less expensive faucets are made from metals such as zinc, which many refer to as "pot metal," or from thin formed steel shells that contain the necessary piping. Pot metal casts easily and has a smooth surface yet quickly corrodes in contact with water if unprotected by a plated surface such as chrome. Thin steel-shell faucets can be well made or flimsy, so put your hands on the faucet and give it a good going over before buying it.

Plastics are often used as the basic material in faucets (photo top left, facing page) because they are easily molded, have a smooth surface and aren't prone to scale buildup. However, plastic-bodied faucets aren't as durable as metal and just aren't designed to last long. Also, moving parts made of plastic can wear out quickly.

Plastic-body faucets cost only \$10 or so; metal ones cost more.

**The beauty of a finish is more than skin deep**—Whatever the basic material of a faucet, a critical element in its manufacture is the finish that goes on it. The most popular finish is polished chrome (photo top right, facing page), which is hard and durable. Chrome, which is electrochemically deposited over nickel plating, doesn't oxidize, won't corrode and won't easily scratch when scrubbed with abrasives.

But chrome can be deposited over plastic as well as over brass or zinc. Chrome-plated brass and chrome-plated plastic or zinc faucets look a lot alike, so much so that it can be impossible to tell what a faucet body is actually made of even when you're holding it.

Chrome plating protects the outside of inexpensive faucets for a time, but the internal workings still corrode or wear out sooner rather than later, making the more expensive brass more economical. In the same way, a chrome-plated zinc faucet won't be as durable as solid brass, but it will last longer than plastic-bodied faucets, which eventually lose their chrome plating.

Even most brass-finish faucets are plated. Often, chrome is applied over a solid-brass base, and then brass plating is applied over the chrome. Although these brass faucets are durable, they will oxidize in contact with air. So those beautiful, polished, brass-plated faucets need to be protected by an applied finish.

Especially for faucets in high-volume locations, steer clear of sprayed-on lacquer finishes, which are sometimes offered as a protective coating. Lacquer doesn't stand up well to bathroom cleaners or even to water.

A better choice is a clear epoxy coating, which is much more durable and resistant to scratches. But epoxy coatings are also somewhat susceptible to the solvents and abrasives sometimes used in bathroom cleansers, so in heavy-use and high-maintenance locations, a chrome finish, which won't tarnish, might be a better choice.

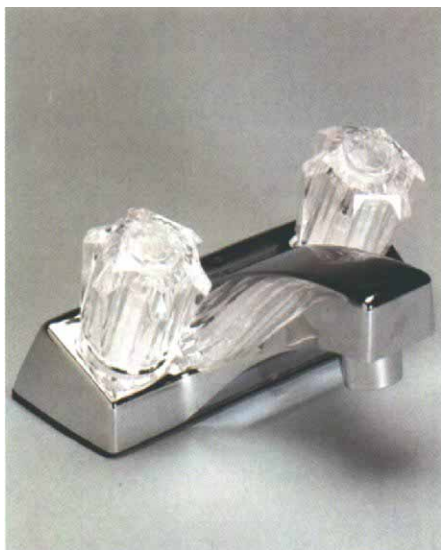
Another new look for bathroom faucets is colored-epoxy finishes, which are baked on, durable and easy to keep clean. Although epoxy finishes are more durable than painted finishes, they will scratch, as I discovered when I accidentally bumped an epoxy-coated faucet against the corner of a file cabinet.

**A new brass finish that won't tarnish**—Offering greater shine protection and less maintenance than traditional brass finishes is a new brass finish from both Moen and Delta. The finish is produced using a technology called PVD, or physical vapor deposition. Moen calls its finish LifeShine (center photo); Delta calls its finish Brilliance. Hans Grohe will soon offer faucets with a PVD finish, but it's still deciding what to call the new finish. Whatever it's called, this technology is the newest thing for faucets, and other manufacturers either have a similar finish in the works or are studying the technology.

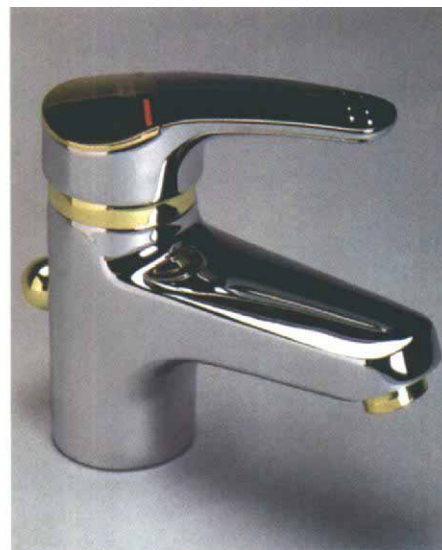
Naturally, Delta and Moen have great things to say about their new finish, which will likely replace lacquered brass for all their brass faucets. They claim the finish is nearly immune to the common afflictions of brass coatings. Salt and sea air, steel wool, sprays and powdered cleansers—even sandpaper—have no effect on the finish, they say. Do avoid getting Drano or any product that contains lye or phosphates on the finish. And avoid Scotch-Brite pads, warns Moen's Al Pfeninger.

One thing you should know about the new PVD brass finish is that in most cases, it's not actually brass. It just looks like brass. And as with traditional brass faucets, the new finish is actually applied over a chrome-plated faucet. Stan Nickell, Grohe's product manager, said a chrome-plated faucet is placed inside a chamber along with a colorizing substance and then subjected to high heat. The color vaporizes and "becomes part of the body," according to Nickell. "They call it 'zapping,' and it will not peel, chip or crack. You can cut through it and won't see a trace of the chrome."

Chuck Brickell, a retired Navy admiral and nuclear engineer who's currently researching PVD at Penn State, said a variety of coating materials could produce the new brass finish. In some cases, the faucet may be brass plated and then coated with a clear ceramic coating of aluminum oxide. Or to get a hard brass finish, manufacturers may be depositing titanium nitride over the faucet, which produces a hard,



**This plastic faucet looks like metal.** A thin plastic base plated with chrome looks like a metal faucet. List price: about \$9.



**Tough chrome plate.** Chrome plating gives this American Standard faucet a bright shine. List price: about \$211.



**The latest in brass.** The technology for the LifeShine finish on this Moen faucet is called physical vapor deposition. List price: about \$347.



**These handles can be mounted more than 8 in. apart.** Thanks to flexible hoses under the sink that connect the valves to the spout, the handles on this Kohler IV Georges brass faucet can be set at least 8 in. apart, leaving plenty of room for cleaning around them. List price: about \$800.

gold-colored finish. Even better news is that the price should be the same as brass faucets.

**One handle or two**—In general, faucets fall into one of two broad categories: faucets that are operated with separate controls for hot and cold water, and faucets that regulate water volume and temperature with a single control.

Years ago, things weren't so complicated. Faucets were simply valves (or taps) at the end of the hot and cold water-supply lines, and any mixing of hot and cold water was done in the sink itself. But modern mixing valves with a single spout are certainly more convenient, as anyone who has tried to temper the scalding hot water from the hot side with cold water from the cold side can attest.

Faucets with individual controls for hot and cold water are known as stem faucets. Standard stem faucets consist of two valve seats (one stem for hot water, one for cold).

The standard distance between the valves of a stem faucet is 4 in., although many wide-spread faucets with widths of 8 in. or more are available (bottom photo, p. 89). Wide-spread faucets have individual valves and separate spouts connected by flexible tubing, rather than a one-piece body like the smaller 4-in. center-set faucets (top photo, p. 92). In addition, these wide-spread valves are easier for most people to use and to keep clean because there is more room between the handles. Because many sinks are often predrilled with mounting holes for the faucet, you'll have to know the faucet type when you choose your sink, or vice versa,

**Lever-controlled faucets take little effort to control**—Single-control faucets usually incorporate valves and spout in a single deck-mounted unit, and a knob or lever is used to control water volume and temperature. For the elderly, for the disabled and for small children, lever-handle controls are simpler to operate and require less agility and hand strength.

Ceramic-disk valving (bottom drawings, sidebar, facing page) is the most reliable (and most expensive, initially) approach to single-control design. The control action is typically smooth and leak-free.

Lever-operated ball faucets are a little more variable in performance (top drawings, facing page). Although the better ones have balls that are machined to close tolerances, balls that are out of round will have high and low spots that make leaks more likely, and the normal grinding action of the ball against the softer valve seats will eventually wear them down, again causing leakage. Balls in this type of faucet can be either plastic, brass or stainless steel.

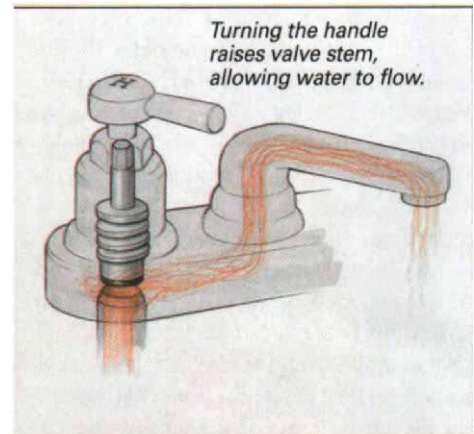
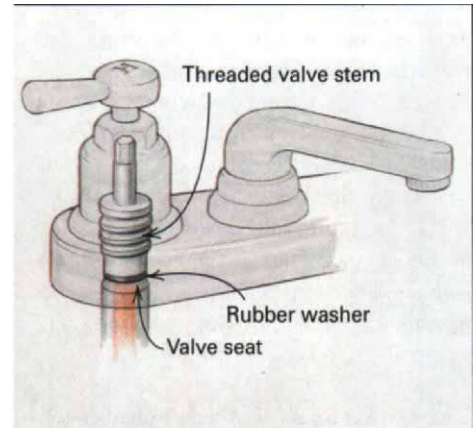
Single-lever cartridge faucets that are pulled and pushed to turn on and off are relatively in-

## Four basic types of faucet valves

**Compression valves are the ones we grew up with:** A threaded stem with a handle on top screws into the faucet body. On the bottom of the stem is a rubber washer that seats down into the water-supply opening. As the handle is turned, the stem is lifted from the opening, and water flows.

**Repair:** Remove the valve stem and the screw holding the rubber compression washer and replace the washer. It also may be necessary to grind the valve seat. Often, this can be done using 400-grit sandpaper.

**Cost:** For a typical washer, a few cents.

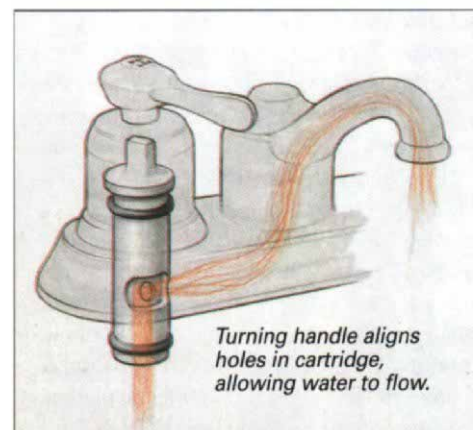
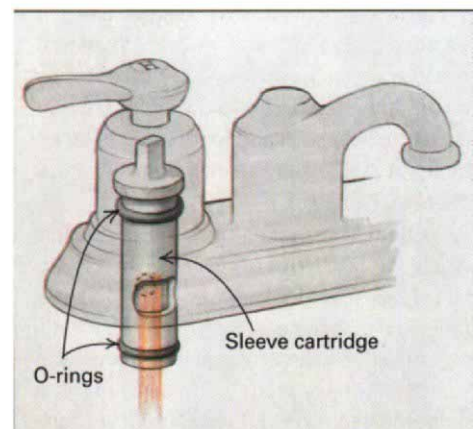


**Sleeve cartridges take the place of threaded valve stems:**

These cartridges contain a hollow stem that turns inside a metal or plastic sleeve. The rubber-lined bottom of the cartridge seats into the water-supply opening. Turn the handle, and a hole in the hollow inner stem aligns with a hole in the outer sleeve so that water flows into the spout.

**Repair:** Usually the entire cartridge is replaced, but sometimes, however, the leaking can be stopped by replacing a washer or O-ring. Occasionally, the cartridge must be pried out before it can be replaced; Moen makes a special tool for that purpose.

**Cost:** For Moen replacement cartridge in brass, about \$16.75; for plastic, about \$13.50.

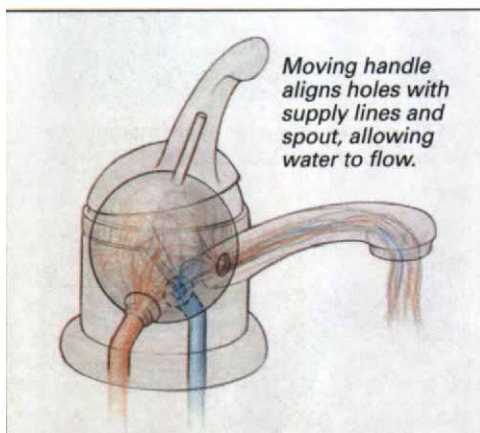
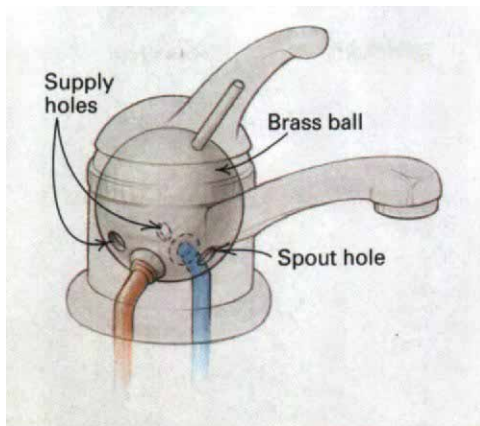
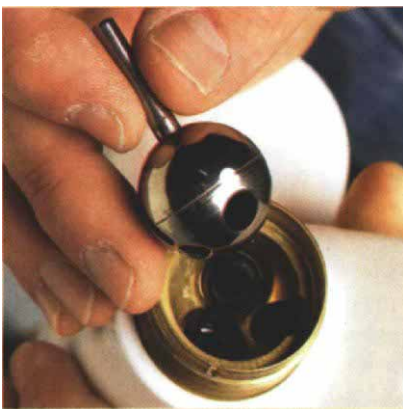


### Ball valves typically have a single-handle control:

The valve consists of a hollow ball that contains three holes for hot and cold water supplies and one leading to the spout. When the handle is turned, one or both of the holes in the ball align with the water supply, allowing either all hot water, all cold or a mix of the two.

**Repair:** The springs that push the rubber seats against the ball valve occasionally wear out and need replacing. Also, depending on the condition of the water, the ball itself may wear out.

**Cost:** For Delta replacement brass ball, about \$7; plastic ball, about \$6.50; seats and springs, about \$2.35.

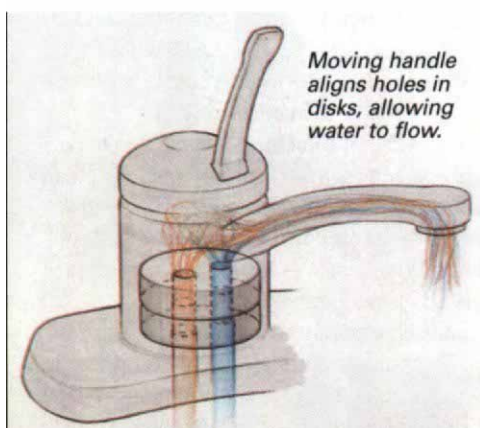
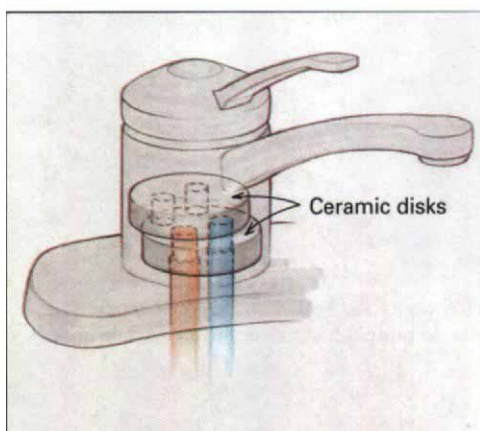


### Ceramic-disk cartridges are simpler than they look:

The water supply and the faucet are separated by a pair of ceramic disks fixed inside a replaceable cartridge. When the handle is turned, the holes in the disks align, and water flows.

**Repair:** The ceramic disks should last indefinitely, but the O-rings, washer and plastic parts eventually wear out, in which case the whole cartridge needs replacing. Also, the grease that lubricates the surfaces of the two ceramic disks can wash away, requiring replacement of the whole cartridge.

**Price:** For a Kohler ceramic-disk cartridge, about \$15.



## Ceramic-disk faucets: Why do they ever need replacing?

by Steve Culpepper

They're the state-of-the-art in faucet valves: small, highly polished ceramic disks of various shapes that contain openings to control the flow of water. When the faucet handle is turned and the openings in the disks align, water comes out of the spout.

Ceramic disks (drawing bottom left) are nearly as hard as diamond and offer extreme resistance to wear. They also are highly resistant to corrosion, chemicals, lime deposits and dirt, and they offer dimensional stability and temperature resistance. So why is it that these cartridges occasionally have to be changed?

As highly polished as ceramic disks are, their surfaces still contain thousands of tiny pores that act as reservoirs for the grease that keeps the two surfaces sealed and moving smoothly. Stan Nickell, product manager for Grohe, said ceramic-disk cartridges need occasional replacement because the silicone-grease lubricant between the two disks eventually washes away, especially on the hot-water side.

To prevent the wash-out problem, Grohe has introduced a cartridge called Carbodur. Its ceramic disks have a high-tech carbon coating and are so highly polished that silicone grease isn't needed.

Nickell assured me that ceramics themselves never wear out. They're too hard for that. But after many rotations, either the grease rinses out, the spindle wears out, or the O-ring that prevents water from spraying out around the handle wears out.

—Steve Culpepper is an associate editor at Fine Homebuilding.





**A 4-in. center-spread faucet takes up little room.** With the valves and the spout mounted together in a single base, this Moen faucet measures 4 in. from handle to handle. List price: about \$152.



**You really can spend a fortune on faucets if you want to.** Kallista's Emperor basin 8-in. spread faucet is plated with gold and silver with a price to match. List price: \$1,021 without handles; add \$650 for standard handles.

expensive and provide good performance initially. But the cartridge sleeve is continually exposed to air, water and soap residues that wash the cartridge lubricants away and leave a residue behind. The cartridge also becomes stiffer to use, making volume control difficult, particularly for kids.

**There are four main valve types**—Regardless of the number of handles on a faucet, it's likely to have one of four basic valve types. The most basic valve is a compression valve, which has a rubberseat washer mounted on the valve stem to control the amount of water flowing to the spout (top drawings, p. 90). These valves

leak when the rubber washer starts to wear out or when the valve seat becomes pitted or scratched. Replacing the washer is cheap and easy to do, and worn valve seats can be re-ground or replaced, if necessary.

I've found that sometimes all that it takes is a bit of polishing with 400-grit sandpaper to clean up the valve seat. This type of faucet is relatively inexpensive to manufacture and is reliable, though some consider it a nuisance to replace the washers periodically.

Some high-end manufacturers still make compression faucets. The beauty of compression faucets is their simplicity, and old faucets that are still in good functional shape—but that might

need some new washers and some cleaning up—are plentiful and can be found in building-supply salvage yards, from plumbers or anywhere you might find old fixtures, including dumps, landfills and waste-transfer stations.

Most manufacturers in the United States have sunk a lot of money into ball, cartridge and ceramic faucets, and no longer even offer compression valves. However, European faucet makers still offer compression valves as a first choice. Europeans just don't seem to mind changing an occasional washer, according to Grohe's Stan Nickell (Grohe is a European company).

Peter Hemp, author of two books on plumbing, has installed just about every valve made. "My favorite would be a compression valve made by Grohe," according to Hemp.

Most manufacturers are producing stem faucets that use cartridges rather than threaded valve stems with screw-on washers. One type of cartridge is a sleeve cartridge (bottom drawings, p. 90). These plastic or metal cartridges (plastic cartridges are as good as brass) contain a hollow stem that's connected to the water supply. When the hole in the stem aligns with a hole in the metal cartridge sleeve, the water flows.

Another type of cartridge uses washerless ceramic disks, which are supposed to be unaffected by temperature, sediment or minerals. The durability of the ceramic disks notwithstanding, these cartridges also contain small mesh filters that get clogged with sediment or minerals. Although ceramic valving is initially more expensive than other types of valving, ceramic disks are extremely hard and offer reliable, smooth and consistent performance (sidebar p. 91).

**If you're installing the faucet, here are things to think about**—

If you're not a plumber, it may be important for you to know what you're getting into before you buy a faucet. In many cases, installing a faucet means first assembling the faucet. For instance, Kallista's Emperor basin set (bottom photo) comes in more than 50 pieces, most of which have to be assembled. Obviously, with that many parts, it's important to make sure that you have all the pieces, that you keep up with all the pieces and that you know where all the pieces go. If you're installing this faucet, the complex one-page drawing of a plethora of parts that accompanies the Emperor may be hard to follow.

A much-less-expensive Moen two-handle faucet comes with a clear set of installation instructions. And it has many fewer pieces than the Kallista. Of course, anybody who shells out more than \$1,000 for a gold-plated Kallista faucet probably can afford to hire a plumber.

Most one-piece faucets come nearly fully assembled. Once the trap is installed (traps are included with better faucets), the faucets are bolt-

ed to the lavatory and then hooked up to the water supply.

However, when the time comes to replace parts of your faucet—usually involving the valves inside the faucet body—where will you go to find replacements? Plumber Rex Cauldwell recommends that you stay with a name-brand faucet so that you won't have trouble finding parts when you need them.

Faucet handles are another price-related concern to keep in mind. Although most midrange and lower-price faucets come with handles, some of the more expensive faucets do not. The reasoning is that one basic faucet base can accommodate a variety of styles, so customers should be able to choose the handles they prefer. The bottom line, though, is that even after you shell out a hundred of dollars or more on a faucet, you can shell out nearly that much more for the handles. For instance, Kallista's gold and silver Emperor faucet retails for \$1,021. With handles, that price jumps to \$1,671.

Another consideration that could determine the type of faucet that you buy is the kind of water you have. Minerals in hard water can build up pretty fast on metal parts. Sometimes, plastic components work better in hard water. Also, highly acidic water can eat up metal parts in a hurry, so plastic components may be what you need in that case.

Ball valves are particularly affected by sediment or by grit in water. If you're using well water, that could be a problem. Sediment also can build up or clog up any type of cartridge valve, making it more and more difficult to turn. If you're curious about what kind of plumbing materials stand up in your area, check with a local plumber.

**Get a faucet that fits the family's use**—One final point to consider before selecting a faucet: Think how it will be used. Most bathroom-faucet spouts are really too low for anything other than rinsing off a toothbrush or filling a glass of water.

For comfortably washing hands, face or hair, a spout should really be almost 8 in. to 10 in. above the rim of the sink, and the flow of water should be directed toward the center and away from the back of the bowl, a configuration that you don't often see. Gooseneck-style faucet spouts (top photo) come close to allowing these clearances, while an alternative is to include a separate deck-mounted spray head, such as you find in a kitchen sink.

Another option is the faucet spout with integral and detachable spray head that is also often used in kitchens (bottom photo). Remember that spouts that are higher above the rim of the sink tend to splash if the sink basin isn't deep.

Finally, you should know that the same federal water-conservation law that mandated 1.6-gal.



**Gooseneck faucets offer plenty of clearance.** There's lots of room between Grohe's Sentossa center-set faucet and the bottom of the lavatory—room for washing your hands or face or even gulping a quick sip of water. List price: about \$420.



**A pull-out sprayer for cleaning up after the kids.** Hosing down the sink after the kids have used it and bathing the baby are just a couple of uses for Grohe's Chiara center-set faucet with a pull-out spray head. List price: about \$355.

toilets and 2.5-gal.-per-min. (gpm) showerheads also requires that lavatory faucets release no more than 2.2 gpm at 60 psi and 2.5 gpm at 80 psi.

Different manufacturers control the flow of water from their faucets in different ways. Most faucets contain a tiny plastic screen that fits inside the aerator. Still other faucets use a regulat-

ing device located inside the valve to control the maximum flow of water. □

*Andrew Wormer is a contributing editor to Fine Homebuilding and author of The Builder's Book of Bathrooms, due in the spring of 1998 from The Taunton Press. Photos by Scott Phillips, except where noted.*