

Better Undersink Plumbing

Throw away the traditional P-trap to minimize leaks and maximize storage space

BY REX CAULDWELL

The plumbing system under the average kitchen sink is ill-conceived. Traditional plumbing designs drain slowly and are prone to leaks. This is because the plumbing usually is constructed with small-diameter trap-pipe material, configured with impeding 90° elbows, and connected with numerous compression joints that seal via plastic or rubber gaskets that can leak after only a few years or if pipes are jostled. Making matters worse, water-supply and drain lines occupy much of the central area of the cabinet, limiting storage space.

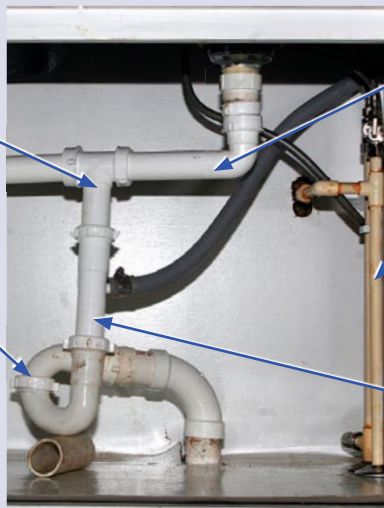
Frustrated with the downfalls of traditional undersink plumbing systems, I now construct plumbing so that all the drain tubes and water-supply lines fit snugly and securely against cabinet walls. While making this modification, I do simple upgrades in hardware, and as a result, I not only increase storage capacity in the cabinet but also am left with a better-performing plumbing system that drains faster and is less likely to clog, leak, or be damaged by everyday household abuse. □

Rex Cauldwell is a master electrician and plumber. His book *For Pros by Pros: Remodel Plumbing* (The Taunton Press, 2005) contains this undersink upgrade.

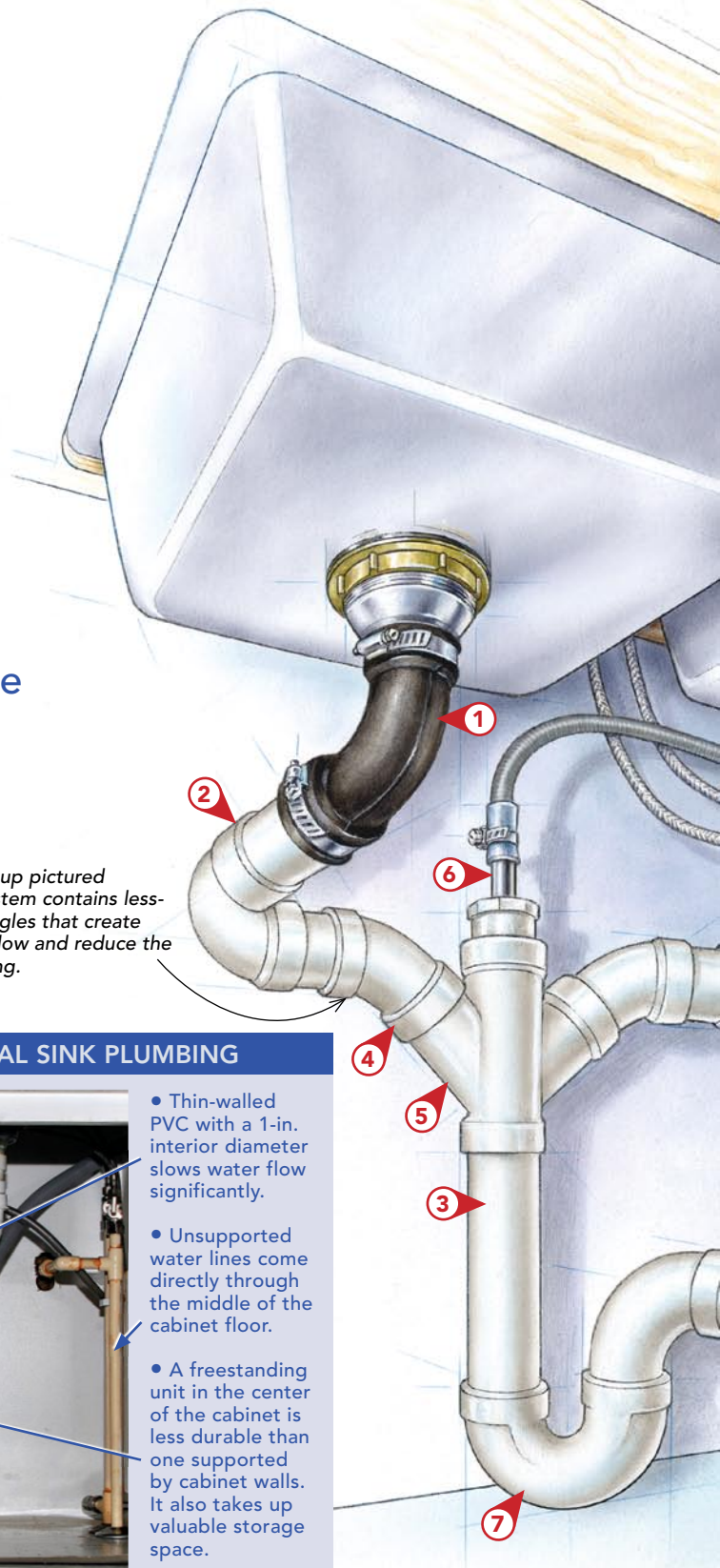
Unlike the setup pictured below, my system contains less-aggressive angles that create faster water flow and reduce the risk of clogging.

THE DOWNFALLS OF TRADITIONAL SINK PLUMBING

- The 90° turns in small-diameter tubing reduce drainage capabilities. These areas are also susceptible to clogs.
- Compression joints are sealed with rubber or plastic gaskets. These joints are prone to leaks, especially when jostled.



- Thin-walled PVC with a 1-in. interior diameter slows water flow significantly.
- Unsupported water lines come directly through the middle of the cabinet floor.
- A freestanding unit in the center of the cabinet is less durable than one supported by cabinet walls. It also takes up valuable storage space.



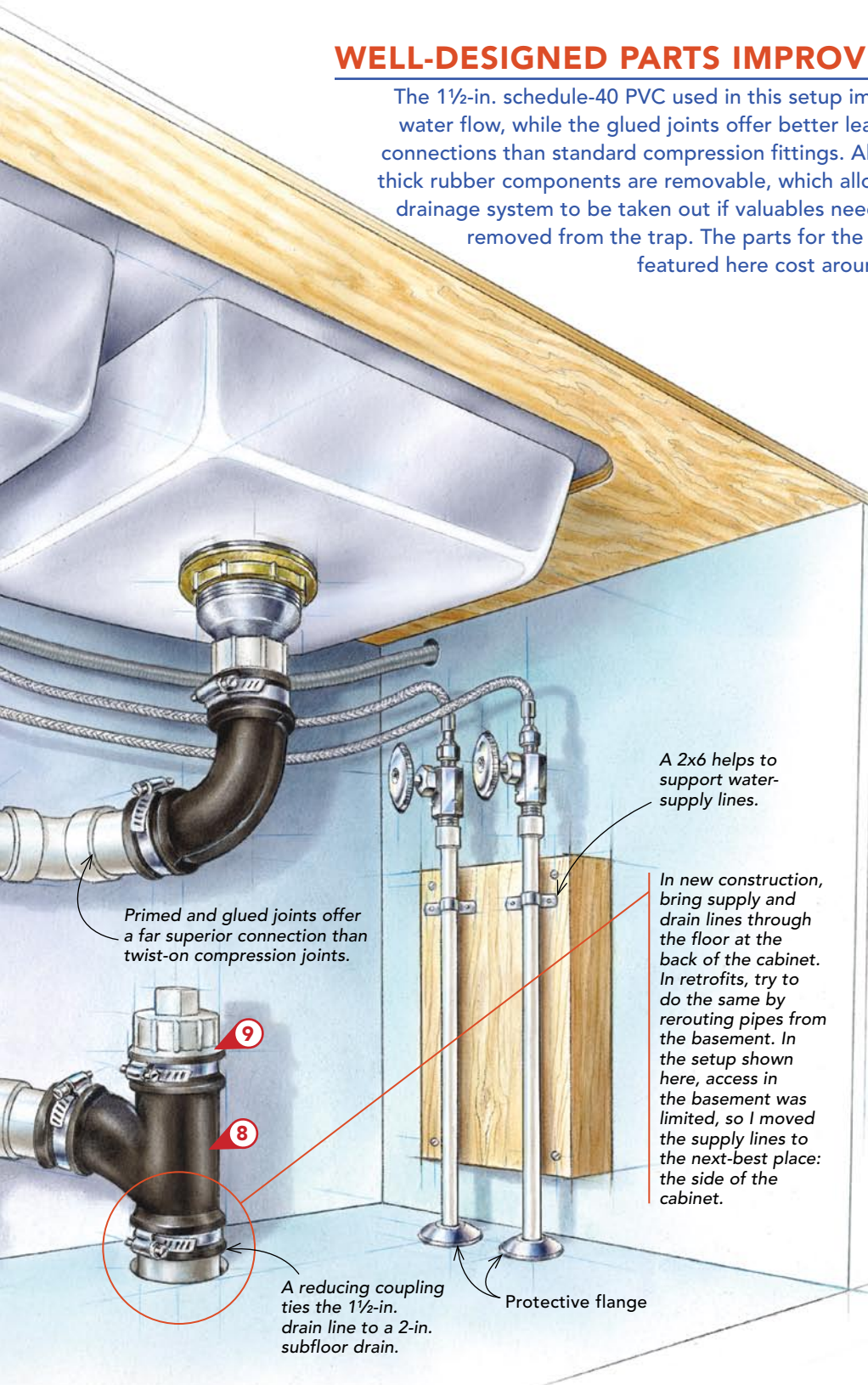
Air-admittance valve

Three venting options

- Add an air-admittance valve at point (9).
- Install a vent that runs into the wall cavity and through the roof.
- Widen the subfloor drain line to 2 in. (shown here). The increased diameter eliminates siphoning, so no vent is needed. With this system, check with your building inspector for approval.

WELL-DESIGNED PARTS IMPROVE PLUMBING PERFORMANCE

The 1½-in. schedule-40 PVC used in this setup improves water flow, while the glued joints offer better leakproof connections than standard compression fittings. Also, the thick rubber components are removable, which allows the drainage system to be taken out if valuables need to be removed from the trap. The parts for the system featured here cost around \$50.



Primed and glued joints offer a far superior connection than twist-on compression joints.

A 2x6 helps to support water-supply lines.

In new construction, bring supply and drain lines through the floor at the back of the cabinet. In retrofits, try to do the same by rerouting pipes from the basement. In the setup shown here, access in the basement was limited, so I moved the supply lines to the next-best place: the side of the cabinet.

A reducing coupling ties the 1½-in. drain line to a 2-in. subfloor drain.

Protective flange

1 Flexible rubber elbows allow the plumbing system to absorb impact and are easy to remove if the system needs cleaning.



2 90° PVC elbows should not be used often, but sometimes are necessary when space is tight.



3 1½-in. schedule-40 PVC increases water flow, reduces clogs, and has greater durability than standard 1-in. plastic pipe.



4 45° street fittings enable wastewater to flow more freely.



5 A double-Y fitting has a large diameter that reduces bottlenecks in the system.



6 The dishwasher connection is made with a ½-in. chrome or galvanized nipple, a ½-in. by ¾-in. reducing bushing, and a 1½-in. slip by ¾-in. thread bushing.



7 A 1½-in. schedule-40 trap prevents sewer gases from escaping the plumbing system. It also captures items that have dropped down the drain.



8 A flexible T-fitting connects the plumbing system to the subfloor drain line. It also allows the rigid section of the plumbing to move when bumped.



9 A 1½-in. PVC cleanout fitting provides a vent tie-in point and access to the subfloor drain.



Attaching pipe when bowls are different depths

My plumbing system can be adapted for single- and double-bowl sinks. With the latter, you might have problems aligning the plumbing against the back wall if the bowls are of different depths and the strainers below are uneven in height. To compensate for different strainer heights, use a 1½-in. schedule-40 cleanout fitting as a spacer. Apply thread sealant to the female end of the fitting, and screw it to the strainer threads. Attach the flexible 90° elbow to the hub on the cleanout fitting with the provided clamp.

