Ask Jon Eakes

Venting the plumbing in an island sink

Last Updated: Saturday, August 26th, 2017, Created: Sunday, September 11th, 2016

Putting a sink in an island in the middle of the kitchen presents some plumbing challenges. Generally the venting for a sink goes upward in the wall while the drain water flows downward towards the floor – but in an island, going up is not an option.

To have a large sink that drains properly you need to keep in mind some basic plumbing principles. We want the drain water to flow freely downward and we must retain some water in the drain trap, wherever it is located, so that sewer odours do not come up into the sink from the sewage piping. Simple! Now let's try to do that in an island.

The first temptation is to put an "S" trap under the sink inside the island. In most jurisdictions, "S" traps are not allowed, and where they are "allowed", they are not recommended. First the "S" trap has no provision for vent piping. The real problem with the S trap is that is works too easily like a siphon. As the water comes out of the trap, it falls down so fast that it draws the rest of the water out of the trap. An empty trap lets the odours into the kitchen.

Some jurisdictions will allow falling straight down out of the sink with the "P" trap under the floor and regular venting further along the line, but that straight fall can create momentum that can also empty the trap.

One acceptable variation which allows putting the "P" trap under the floor is to take a horizontal run of about a foot to slow down the force of the water hitting the trap under the floor. There are usually limitations that the total length of pipe from the bottom of the sink to the trap must not be more than 24 or 36 inches. Check local plumbing codes to see if this is permitted.

What is allowed everywhere is this same arrangement with a vent-valve installed on the horizontal line, at the "V" point in the graphic. The vent valve lets air from under the sink to be drawn into the drain pipe to protect the trap. Get details on vent valves here. The vent valve does provide ventilation to the system, but introduces a bit of drag into the drainage, often slowing down the sink flow. If you unscrew the vent valve and it flows better with an open pipe, then you will want to bother to follow the complicated venting in the next paragraph. (By the way, you cannot leave the vent valve off as it will smell and maybe even overflow.)

The best arrangement that provides a "P" trap right under the sink with a slight tail pipe to control the flow down to under the floor and then a totally open vent pipe rising up towards the top of the island. That vent pipe then turns downward to join the regular ventilation piping of the house under the floor, with all vent piping sloping down towards and connected to the drain piping to keep the vent pipe always clear. The important detail here is that the loop of pipe just under the counter top must have the lowest open part of the pipe above the high-water line of the sink. Now we have an unrestricted flow of ventilation air into the system, and an unrestrained flow of dirty water out to the plumbing stack of the house.

Thanks to CarsonDunlop, a home inspector training group in Toronto, for use of some really good graphics.

Keywords:
Counter, Drainage, Kitchen, Codes, Drains, Water, Odours, Smell, Sink, System, Trap, Valves, Ventilation, Pipes, Plumbing, Problems