

Air Compressor Automatic Drain Valve

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I got tired of crawling under my compressor and struggling with the sticky drain valve to clear the accumulated moisture from the tank every morning, so I when I stopped in at [Harbor Freight](#) one day, I picked up one of their [automatic drain kits](#) (a.k.a. "Auto Compressor Drainer Kit"). Ten bucks, how can I lose?

The automatic drain valve replaces the manual drain valve on the bottom of the tank. It needs more space than the manual valve, and you may have to raise the tank to accommodate it. Mine sits on a couple of 4x4 blocks.

The auto drainer is pressure actuated. It ejects tank condensation through a 1/4" NPT opening in the side of the valve each time air pressure is applied or removed from the small fitting on the end of it. You can see the hole in the picture of the kit.

Installation was pretty simple, but I did run into a couple snags.

The instructions say the valve actuator is supposed to be connected via a plastic tube to either the "discharge line unloader" or the "combination tank check valve and discharge line unloader." Alternatively, the valve actuator line can be "tee'd" in line with the "vented pressure switch", the "pilot valve," or the "receiver pressure unloader."



What??? I took a closer look at my compressor and its manual.

It's a 6.5 HP (yeah, right) Craftsman Professional model with a 60-gallon tank. I also spent a few minutes surfing the web for some help with the terminology. Turns out that a "receiver" is a compressed gas storage tank. The tank! Makes sense, I suppose, but I never would have guessed it.

An unloader is a valve that releases pressure. I was briefly confused by a few places on the net that also used that term for the Safety Relief Valve, the normally closed valve that opens if the pressure in the tank exceeds the valve rating. My safety relief valve is located on the manifold at the top of the tank, right under the pressure gauge. It has a little key ring on it, which you can pull to test it. But this is not the "unloader" that the directions are talking about.

When the pressure switch shuts off the compressor, it also activates a valve (the unloader) that relieves the pressure over the compressor piston, so that when the compressor restarts, there is no pressure on the piston. This permits an easier start, and an easier start means extended motor life.

On my system, there is a line running from the compressor to a check valve mounted in the top of the tank.



Coming out of the side of the check valve is a small aluminum tube that runs to the pressure switch. That's the unloader line. Learn something every day.

I unplugged the compressor, released all the pressure, and removed the existing drain valve. Most places call it a drain cock, but sometimes, for reasons unknown, it is referred to as a "petcock." In its place, I installed a tee fitting with the new drain cock on the bottom (in case the auto drainer ever fails), and the auto drainer coming out of the side.



The water exit hole on the side of the auto drain valve is aimed straight down, so you can't see it very well. If you look carefully at the [enlarged image](#), you can just make out the edge of it on the bottom of the valve.

I was a little reluctant to cut into the aluminum unloader line, but there was no other place on my system that applied and released pressure every time the compressor cycled on and off -- not that I knew of, anyway. The tee fitting that came in the kit was for plastic tubing only, so I had to run out to the Borg -- Home Depot, that is -- to pick up a standard 1/4" compression tee fitting.



I removed the unloader line,

cut a one inch chunk out of it,



inserted the tee,

and reinstalled it on the compressor.



Then I ran the plastic tube from the auto drain valve up to the tee fitting on the unloader line, plugged in the compressor, and turned it on. Argh! The new drain cock leaked -- of course! Harbor Freight, clear across town, is going to get away with it this time. :-\

After fiddling with it, overtightening it, wearing out my fingertips, and using some rare language, I gave up, trucked back over to the Borg, and shelled out four bucks for a good one. What a difference! This one has a nice knurled knob that turns easily. The valve opens and closes positively with only light finger pressure. It's a good thing I didn't have one of these before, or this page might never have been born.



Finally, success! No leaks. The automatic drain gives a satisfying "pfft" whenever the compressor cycles on or off. The spiders can live down there in peace now...

In this setup the condensation is directed straight onto the floor. Well, it would if there were ever enough moisture.

My compressor gets fairly frequent use, and sometimes cycles several times a day. The automatic valve releases a puff every time the compressor motor starts and also when it stops. So, now, rather than getting drained once a day (or less), it now gets cleared four to eight times a day. Before I installed the kit, I'd get maybe an ounce of water when I drained it, usually much less.

Now, with the moisture being cleared twice every time the compressor cycles, the amount of water is never even enough to make a wet spot on the concrete below. Of course, I live in the Arizona desert -- it's not humid here very often. If you live in a wetter climate, you could install a 1/4" NPT to barb fitting

and run a hose to wherever you want the water to go.

Additional Notes:

tip from [Josh Klopping](#): I 'teed' into the line at the end of the unloader line closest to the compressor discharge. Unfortunately, that side gets really hot, so the hose softened and blew out. Changing to the other, cooler end fixed the problem.

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