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By Norman Hall

## Can I Change My Vacuum Condensate Pump to a Simple Condensate Pump? (Part 3)

So far, this short series of R. L. Deppmann Monday Morning Minutes briefly looked at vacuum condensate systems used to save time in night setback systems and for temperature control in older steam systems. When you use the word vacuum with most people, they think of sucking something up like a vacuum cleaner does. There are times that vacuum condensate systems were used to lift or “suck up” the condensate from a lower level. Today, we will examine the use of vacuum condensate pumps to lift condensate from a low return.

Most low pressure condensate systems have gravity returns. The water flows by gravity from a higher elevation down to the condensate receiver. There are times when a small return line is lower than the inlet to the condensate receiver and a vacuum unit is used. When attempting this, you must use what is known as a lift fitting. Figure 1 shows a typical lift fitting.

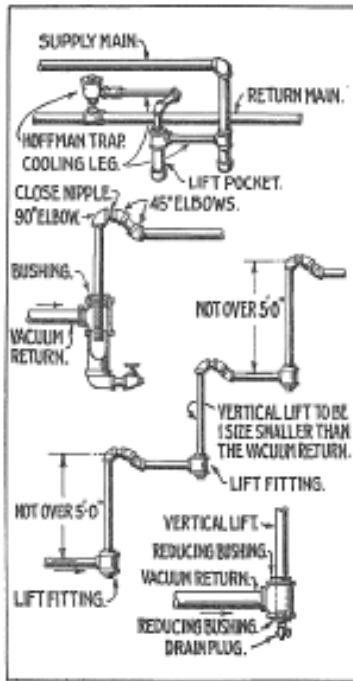


Fig. 1 from Hoffman Data Book ©1923



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Often I am asked why we need unusual fittings. Can't the vacuum just suck the water up? Think of a straw? As a child I used to be quick to suck down a chocolate malt or shake. Near the bottom I just could not get that last little bit. I would suck and suck and make all kinds of noise. I'd get a lot of air and a little chocolate. I would continue until my mother would tell me to stop or worse!

**OK, you know you did it too!**

The return line has air and water. When we apply the vacuum to the line, we tend to suck more air than water since air is lighter. The lift fittings cause a “pool” of water in the horizontal pipe so the pipe fills with water and the vacuum pump is able to pull the water. This was so prevalent in the early 20<sup>th</sup> century that many manufacturers marketed ready-made fittings. Today if you need to replace one, you are left making one yourself.

Before you run off and try lifting condensate using a vacuum pump, I offer a couple warnings. Water boils at less than 212°F under vacuum so watch those leaking steam traps. Vacuum condensate pumps are expensive and not very efficient. It is always better to locate a small condensate pump at the lower level than attempting to lift condensate.

**If you need a replacement condensate vacuum unit, Xylem B&G Domestic makes a great one and it comes with the R L Deppmann sales engineering team in Michigan and Northern Ohio!**

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