

Orphan Gas Appliances

How Can An Appliance Become An Orphan?

The term orphan is used for appliances when there are multiple fossil-fuel appliances (i.e. burn oil, or gas) on one chimney (or exhaust stack or flue) and one or more of those appliances are removed. The remaining appliances attached to the exhaust stack or chimney are called orphans. For example, if a hot water heater is sharing a chimney with a furnace, and the furnace is removed, the water heater would be considered an orphan.

Why Would A Gas Or Oil Appliance Be Removed?

Generally, they are replaced when they wear out. Sometimes they are replaced by a more efficient unit to save on energy bills. What often happens is a gas furnace is replaced with a heat pump with electric backup heat, or a new high efficiency furnace or boiler is installed to replace an old low efficiency furnace or boiler. New high efficiency condensing furnaces and boilers have fan powered combustion air brought in from the outside and fan powered exhaust going to the outside. Thus, they require their own individual piping for combustion and exhaust air. Those two pipes must go to the outside and the exhaust can't simply be attached to the existing chimney. For one thing it is fan powered and this would result in air flowing backwards through the exhaust in the orphaned appliance.

So What, Appliances Don't Get Lonely?

That is true, appliances do not get lonely. However, the chimney is sized based on the number of appliances attached to it. When one appliance is removed the remaining appliance is attached to a chimney that is too large. This can cause draft problems that may become a safety hazard in the home.

What Kind of Hazard?

For a chimney or exhaust stack to work it must be warm to carry the air out (as the heat rises). If it is too large, the heat might not be enough and wind may actually blow back down the chimney. This in turn makes the exhaust from the orphaned appliance empty into your home. If it is burning properly, that exhaust can be odorless. However, the exhaust contains carbon monoxide (CO), so it can make you feel sick and have

headaches, or under very bad circumstances can cause death (especially to the elderly or very young). Another problem is the chimney may become corroded when the warm humid air left over from the combustion process condenses on the relatively cooler inside walls. Those exhaust fumes contain acids that will corrode the chimney mortar connections. Once the mortar between the blocks is corroded away, exhaust gases (containing CO) may leak into your home. In a worst case scenario, they could let enough heat through to ignite combustible materials that are connected to the outside of the chimney.

What Is The Solution?

The solution is to take care of the orphans, because if they are ignored, problems already present will get worse, and if you had no problems before, you will probably be having some in the future. The solution is to have a properly sized flue installed. Often a good approach is to install a chimney liner sized specifically for the orphaned appliance. That liner will have a weather cap on the top to stop rain etc., from falling into it. It will also be made out of a material like stainless steel that cannot be harmed by the acids. Most orphaned hot water heaters will require stainless steel liners that range in diameter from 3–7 inches. The liners are often insulated to increase the efficiency of the orphaned appliance.

How Long Will A Liner Last?

Stainless steel liners should outlast your equipment, and by being properly sized they should make your orphaned appliance operate as efficiently as possible. Better yet, your chimney will have no further damage, so it will last longer, too.

Who Can Install A Liner Properly?

In most cases, your professional HVAC contractor can size, design, and install a stainless steel liner in your existing chimney or exhaust stack. Some HVAC contractors may bring in a chimney company to do the actual liner installation. In any case, you don't want to ignore an orphaned appliance.

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