

# The Wrong Replacement Filter Can Cost You Money

## A new filter from the store will work in my HVAC system, won't it?

Just because a filter is available on store shelves and advertised as longer lasting and more efficient doesn't mean it will work in your furnace. In order to properly select a filter for your home HVAC system, you need more information than most filter manufacturers provide at your local supermarket or hardware store. For example, if the average consumer sees an advertisement that says "increased efficiency" on the filter box, they immediately think the operating cost for using the filter will be reduced. However, in most cases they would be wrong. If an ad reads "increased filter life due to pleated design," buyers might also assume that the filter will last longer than the standard one that came with the furnace. Again, that may not be true. The truth in the filters' advertising is based on the definitions used by filter manufacturers for designing and evaluating filters. The bottom line is buyer beware.

## Why a more efficient filter doesn't always mean energy savings.

Let's examine what "more efficient" means in filter design language. It means the filter will remove smaller particles in larger quantities. Since the average one-inch deep throwaway furnace filter is only designed to remove large particles, it is not very efficient in the language of filter design. However, when it comes to the energy required to move air through the HVAC system, those "inefficient filters" work really well. This is because the larger openings in the inefficient filters require less force to pull air through them. Using an efficient filter with the same blower operating inside of the HVAC system means you may end up with less total airflow because it requires more force to get the air through it. Therefore, the only way to regain the correct airflow is to increase the blower's speed. The faster a blower goes, the more power it takes to operate it. To make things worse, the actual power required to operate your HVAC system grows geometrically when motor

speed is increased. This means for even a minimal increase in airflow, the power required increases dramatically, along with the related operating expense.

## At least installing a more efficient filter will always result in better filtration right?

Not always, unfortunately. The total efficiency is dependent on the filter's holder too. Simply sliding a higher efficiency filter into a standard one-inch slot will not stop some of the airflow from bypassing the filter. The higher the efficiency rating of the filter, the more robust the cabinet design and filter rack must be to prevent bypass leakage.

## Will a longer-life filter outlast my current filter?

It's a definite maybe. Let's take a closer look at the claim of a longer life due to pleated design. First off, it is absolutely true that the pleated design increases the surface area of the filter. Thus, it follows that the filter pleated design with its larger surface area will last longer than the smaller, flat-surfaced filter. Still, this is only true if they are made of identical filtering material. Generally, pleated filters are made of more efficient filtering materials than the standard flat throw-away filters. Since they are more efficient than the flat filters they are replacing, the comparison to the existing filter is like comparing a fish net for catching gold fish to a large shark net. The bottom line is that there is no way to tell if the replacement filter will last longer than the original one other than putting a filter in. It all depends on the type and size of the filter, and amount of dust in your home.

## Why is lowering airflow in a HVAC system a problem?

HVAC systems are carefully-designed and -balanced, complex heat-transferring machines. Heat exchangers are used to transfer the heat to the

air in an HVAC system. To work properly, these heat exchangers are designed to operate with a minimum and a maximum airflow going through them. In the worst case heating scenarios, low airflow in a furnace can cause short cycling by tripping the high temperature safety switch. Low airflow through the cooling coil could cause it to ice up, resulting in cooling failures or, worse yet, flooding.

## How can I know for sure if a new filter will work in my HVAC system?

Make sure the filter you select is compatible with the design specifications of the HVAC system. Obviously, if you want to increase your filter's efficiency to have cleaner air there must be a way to do it, and there is. However, it takes someone who can understand your personal filtration requirements and then marry them with your HVAC equipment's airflow requirements. For your HVAC system to work properly, the person working on it must be able to:

- Specify filter type based on your requirements
- Design the installation, including controls and ducting
- Install the ducting and controls as designed
- Test the new filtration unit to make sure the HVAC system has the required airflow

## Who can you call for filter upgrades?

As you may have guessed by now, it is not the clerk on the supermarket filter aisle. If you want your home HVAC system to remove household dust, plant spores, pet dander, or more exotic odors, etc., you should consult with an expert. You need to call a professional HVAC contractor so the result is a filtration system that meets your needs and will work properly with your HVAC equipment. HVAC contractors provide filtration systems to satisfy every customer's needs.

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