

The Duct Man

HVAC Industry News You Can Use



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Flex Duct Engineering Study Shows Quality of Installation Makes All the Difference

One of the primary reasons for the ever-increasing popularity of flex duct in new construction is ease of installation. Paradoxically, however, it is this very attribute that leads to its biggest drawback. Substandard flexible duct installation is a common and widespread problem that can have a detrimental effect on system performance.

When flex duct is properly installed according to local codes and manufacturer specifications, it can perform almost as well as a rigid metal duct system. But flex duct has higher friction losses than sheet metal duct due to its spiral wire construction, and turbulence due to sagging, kinks, runs that are too long or improperly supported, too many bends, and sharp turns can significantly increase resistance. In a study conducted several years ago at Texas A&M, researchers found virtually no difference in pressure drop between flex duct and rigid metal duct when properly stretched and installed correctly. But at just 4% compression, or "slack", flex duct moved 37% less cfm than metal duct. At 15%, friction rates doubled, and quadrupled at 30%. Not surprisingly, duct performance levels were abysmal at 45% compression.



**BEWARE
the DUCTOPUS**

To ensure maximum efficiency, flex duct systems must be well-designed and properly installed. The most basic and important requirement of flex duct installation is to use the minimum length of duct for each connection and ensure that the inner liner is pulled tight to reduce air resistance. Sag should not exceed 1/2 inch per foot, and support straps should be at

least 1.5 inches wide and spaced at short intervals no more than four feet apart. Bend radius should equal or exceed one duct diameter, but an even better practice is to use rigid metal for bends and flex duct for straight runs. Avoid too many ducts coming off the plenum, aka the dreaded and inefficient "ductopus". And, finally, purposeful oversizing of HVAC equipment to compensate for expected air flow problems due to poor flex duct installation is an inadequate, not to mention inappropriate, fix.

MYSTERY TOOL

Guess what this is to win a \$100 gift card to Longhorn Steakhouse



Send your answer to news@ephomiek.com
First correct answer wins!*

*E.P. Homiek employees not eligible

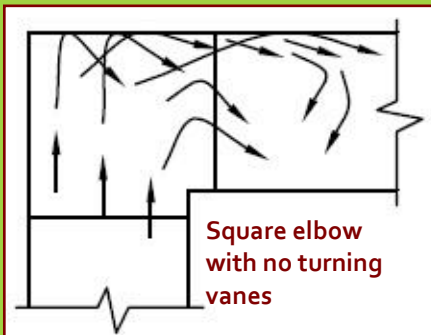


TURNING VANES: Are they effective?

The answer is yes, and here's why

Turning vanes in HVAC ductwork, when properly designed and installed, have been proven time and again to reduce pressure losses and increase system efficiency. Contractors should never take it upon themselves to add or remove vanes specified in a design plan, as doing so will skew design calculations and make the system function differently than intended. As for the common belief that turning vanes' added surface area increases friction in a system, this a myth that has been dispelled by SMACNA, ACCA, and various other industry leaders and associations.

INEFFICIENT

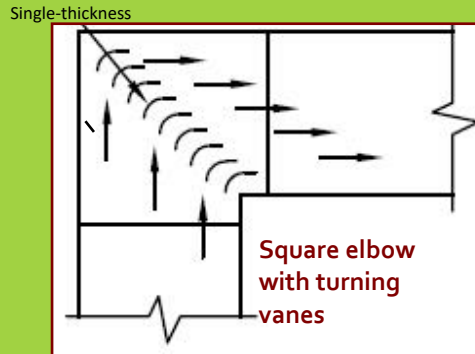


Square elbow with no turning vanes

BRANCH LOSS COEFFICIENT = 1.20

Lack of turning vanes causes excessive turbulence in fittings, resulting in a very high pressure drop.

EFFICIENT

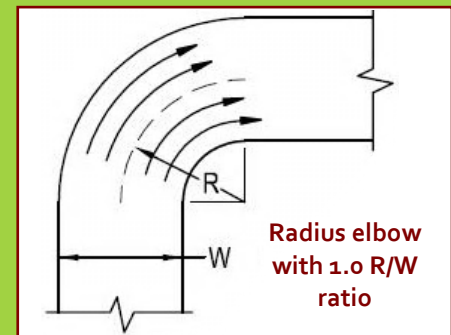


Square elbow with turning vanes

BRANCH LOSS COEFFICIENT = 0.15

Single-thickness turning vanes ensure uniformity of airflow and very low pressure drop. This elbow is **8 times more efficient** than the elbow pictured at left.

EFFICIENT



Radius elbow with 1.0 R/W ratio

BRANCH LOSS COEFFICIENT = 0.21

A radius elbow ensures uniformity of airflow. Minimum radius is 1.0, 1.5 is recommended, and 2.0 yields the same efficiency as the square elbow with vanes.

Maintenance agreements can be one of the best ways for an HVAC contractor to increase revenue and maintain a steady business during "slow" seasons. These programs, however, can be a tricky sell. Customers tend to be wary of entering into these contracts if they aren't convinced of the value, and many service technicians aren't sufficiently conversant in explaining the benefits of the program. Maintenance agreements must be properly managed and marketed in order to be profitable and keep your company in good standing with your PM customers.

Different people value different things, which is why maintenance agreements should be multi-faceted to appeal to various clients, and should offer enough value to be considered worthwhile. Thorough system inspection and tune-up will be most attractive to some customers, while others are more apt to sign on to receive priority scheduling, discounted parts, or same day service. In order to effectively sell these contracts, technicians must themselves recognize the value of a maintenance program and be well-trained to explain the various benefits to the customers. Contractors should offer several plan levels. A basic plan usually covers labor costs but does not include parts. Mid-level coverage can also include the cost of parts and priority service. Top echelon agreements usually include tune-ups, no-charge emergency service, and priority same-day service.

MAINTENANCE AGREEMENTS don't just keep your techs busy. They help boost your bottom line.

While it goes without saying that these contracts help keep technicians busy year-round and provide a source of steady income, they are also an effective opportunity to gain additional business. Technicians performing PM can spot and correct issues before they can morph into bigger, more costly problems. This means fewer start-of-season service calls from PM clients, allowing more time to service non-contract customers when multiple calls start coming in.