

Ductwork that moves air best

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The best way for air to move through a duct is to have a straight duct with a smooth inside wall and a round form will have the smallest surface area to cause the air to slow down. That straight smooth round duct is what is considered the benchmark for good ducting. Everything else is measured against that and measured in what is called Equivalent Duct Lengths. The chart above is used in training courses for heating system installers. A flexible duct with those ridges on the inside slows air down considerably, meaning that as far as the air flow is considered the same length of flex ducting is twice as long as our smooth sheet metal ducting. Every type of elbow will slow air down, some more than others as you can see in the chart.

This slowing down of air is why some poor convoluted duct installations, like that 15 foot long flex duct from the bathroom fan that snakes all around the attic, can end up being 300 feet long as far as the air flow is concerned. A duct like that may have no air at all coming out the other end because there is just too much resistance to air flow for the small fan. That explains why many bathroom fans don't remove much moisture.

Good heating, cooling and even ventilation systems will be installed with smooth sheet metal ducting. Circular ducting goes together easily, but if you have ever thought about installing the rectangular ducting that you can easily purchase in the renovation stores, you might be a bit at a loss as to how it goes together. Let's walk through making a solid air tight joint. You can do this with ordinary pliers but having some specialized sheet metal tools can certainly help.

First on the narrow side you need to bend the flange back on itself, but don't crimp it down hard. This lip is what is used to hold the two pieces together later.

Take the 'Z' shaped connector and slide it onto the two long flanges. You may have to cut this to length. Make sure that the two Z connectors go in the same direction. If you put them on facing each other, the next step will give you difficulty.

Slide the second duct section into the other slot in the Z connectors and line up the two ducts.

Now take the 'U' shaped connector and slide it onto the two crimped flanges you made in the first step. This locks the two sections of ducting together.

Cut off any excess length on this connection but leave at least an inch sticking out both ends. These tabs are bent down to really lock everything together.

Then apply aluminium duct tape to cover the entire joint. Never use cloth duct tape -- this stuff is useless for ducts and I don't know how it ever got that name. Only the aluminium tape will seal this air tight and keep it sealed. [Click here for tips on working with aluminium tape.](#)

Now you have a professional joint on professional ducting that will move air efficiently where you need it -- and you have no duct losses so all the heating, or cooling or ventilation air is getting to where you planned to get it.

Keywords:

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