

# “THE DUCT-FREE ZONE”

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A chain is only as strong as its weakest link. We have all heard that saying before and for many, the weakest link in the mini split system has been the flare connections at the indoor and outdoor units. Let's be honest with each other, for whatever reason, the most common area for a refrigerant leak in the mini split system is the flare connections. No matter how skilled and experienced the installer, a leak at a flare connection still shows its ugly head from time to time.

I think I have the answer to this age-old problem...The trick to the perfect flare connection does not have a singular solution...it is multifaceted.

The first key to a perfect flare connection is the flare itself. As obvious as that statement is, it is where most problems lie when it comes to flare connections. If the flaring process of the copper tubing is done improperly, the flare is doomed to leak.

Because mini split systems utilize R410A refrigerant and run at higher pressures than R22, the diameter of the flare needs to be larger to compensate for the higher pressures the connection will experience. That said, we need to use a flaring tool specifically designed to create the R410A flare...I like the Yellow Jacket Deluxe 45° flaring tool.

The key to this tool is that it has a tubing stop... if used properly; it won't allow you to over or under flare the tubing. Now, I won't say the tool is idiot-proof because idiots try real hard, but if the tubing stop feature is used as designed, the flare diameter

and depth will be perfect each and every time.

Yellow Jacket has a great video regarding this product...you can see it on YouTube by writing YELLOW JACKET QUICK TIP: R410A, MINI SPLITS AND FLARING into the YouTube search feature.

The second step in the quest for the perfect flare is to use Nylog Blue. I'm always amazed how few of us are even aware of the Nylog product. Nylog Blue is a viscoelastic fluid made from synthetic refrigeration grade compressor oil. Nylog Blue is fully miscible and compatible with all system refrigerants and oils.

Now, this is where I need us old-timers to have an open mind because what I'm about to tell you runs counter to what us old guys were taught back in the day... You want to put Nylog Blue on the face of the flare...that's right, the face of the flare!

I'm always reluctant to call Nylog a "sealant" because again, for us old guys, "sealant" has bad connotations. We think of the "sealant" that our pops poured into the radiator of the '59 Mercury when the radiator blew...that stuff did indeed seal the leak in the radiator but it also sealed everything in the cooling fluid's path...like the engine block!

Unlike most "sealants", Nylog will never harden...it will always remain ductile. Refrigeration Technologies, the people who make Nylog, have a great video on YouTube that you can access by writing, NYLOG, HVAC GASKET AND THREAD

SEALANT into the YouTube search feature.

The last step to the perfect flare process is to follow the equipment manufacturer's torque specification for the flare nuts.

Again, if we are honest, most of us don't do this...primarily because most of us don't have an open-ended torque wrench. Those of us who are motorheads have torque wrenches but automotive torque wrenches are designed to be used with sockets...that won't work for torquing a flare nut.

I like the crescent torque wrench by CPS...they call it the BTLDTW BlackMax. The fact that it is a crescent design allows it to be used on a variety of flare nut sizes and it has a digital display where you program in your desired torque and it alerts you both audibly and visually when that number is achieved.

You can get more information on the CPS BTLDTW BlackMax torque wrench at [www.CPS-products.com](http://www.CPS-products.com).

I'm convinced if we follow the three steps that I have described here; we can relinquish the flare connection's hold on the title of "weakest link."

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