Technical Procedure
Flaring a Tube

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Flaring (part that spreads) a tube is an important skill that all HVAC (heating, venting and air-conditioning) people must know how to do. It is an easy means of attaching various tubes together common to the HVAC field.

The procedure includes a few different types of equipment which includes a tube, tube cutter, reamer and a flaring tool. This equipment no matter the brand is all similar in nature. They all do the same thing. When these items are used in a specific way the end result will be a flared tube.

Preparing
- Determine What’s Needed
  A technician will select the type of tube he needs need (Fig. 1) and proper diameter. (Fig. 2)

Fig. 1

Image obtained from
http://www.diynetwork.com/diy/cda/article_print/0,1983,DIY_14190_2270855_ARTICLE-DETAIL-PRINT,00.html

Fig. 2

Image obtained from
http://discover.edventures.com/images/termlib/d/diameter/support.gif
• **Measure & Cut**

The technician will determine and measure and mark the length with a marker. *(Fig 3)*, He will then place a tube cutter *(Fig. 4)* over the mark and turn the knob until the cutting wheel slightly touch *(Fig. 5)* the mark. The cutter will be rotated a minimum of once around the circumference of the tube to prevent an uneven cutting. The knob will be turn once again and be repeated until the tube is cut.

*Fig. 3*

Image obtain from:
http://www.copper.org/applications/plumbing/techref/cth/images/figure10new.jpg

*Fig. 4*

Image obtain from:
http://www.germes-online.com/direct/dbimage/50217518/Tube_Cutter.jpg

*Fig. 5*

Image obtain from:
http://www.sweethaven02.com/BldgConst/en5112a0039.gif
• Ream

(Fig. 6) An inner & outer reamer (rotating finishing tool with sharp cutting edges used to shape a hole) will then be used to remove the burs (sharp thin ridge around the cut) to help prevent cracking on the end of the tube. The technician will insert the end of the piece on the ends of the reamer. The reamer will be rotated on both sides and turned until all burs are removed. Once completed its ready for flaring.

Fig. 6

Image obtain from:
http://cgi.ebay.com/Refco-RFA209-INNER-OUTER-REAMER-HVAC-PLUMBER-TOOLS_W0QQitemZ250034516629QQihZ015QQcategoryZ66999QQc mdZViewItem#ebayphotohosting

Making The Flare
• Setup

(Fig. 7) The technician will now insert the reamed piece 1/8" pass the top edge on the flaring block, insuring the end to be flared is on the angled side of the block. The wing nuts are turned counter clock wise for it to be easily inserted. Once placed in the hole, the wing nuts will be turned clockwise securing the assembly.

The technician will now attach the slip-on yoke to the flare block. Once placed on the block and flare cone is aligned the over the tube, the handle is turned clockwise rotating the feed screw down forcing the flare cone down to the tube. He will stop once it is just touches the tube. As a result of this the slip-on yoke is secured.
• Confirming Setup
  The technician will verify and recheck the setup. The wing nuts will be checked to prevent slipping of the tube and any other problems that may occur. Once confirmed the technician will continued.

• Make Flare
  The technician will now securely hold of the flare block with one hand and firmly turn the handle with the other, until it will no longer turn. As a result a flare is made on the end of the tube. (Fig. 8)

Fig. 8

Image obtain from: http://www.copper.org/applications/plumbing/techref/cth/cth_flrdjts.htm

• Remove Equipment
The technician will turn the handle counter clockwise until the slip-on yoke is detached. The wing nuts will be loosened and the piece is able to be removed.

**Checking**

*Note: (If any flare does not pass any of the checking it is bad and must be replaced.)*

- **Visually Inspect**
  Once the flare piece is removed the technician will visually inspect the flare *(Fig. 9)* for signs of cracking or splitting.

- **Check With Flare Nut**
  The technician will also slide a flare nut *(Fig. 9)* on the tube from the other side and check to make sure it will rotate freely and the flare is not too big.

![Fig. 9](http://www.copper.org/applications/plumbing/techref/cth/cth_8flrdjts.htm)
• **Check With Fitting**

The technician will make certain with one last check. He will place the flare on a flare fitting (Fig. 10) to make sure it will work correctly.

**Fig. 10**

Image Obtain From:
http://www.copper.org/applications/plumbing/techref/cth/cth_8flrdjts.htm

• **Ready For Use**

Once all the checks are completed and passed the flare is now ready for use. A properly made flare will insure that the air-conditioning system will be free from leaks at the joints. (Fig. 11)

**Fig. 11**

Image obtain from:
http://www.copper.org/applications/plumbing/techref/cth/cth_8flrdjts.htm