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TOOL RECOMMENDATION DATA SHEET
TUBE PINCH-OFF TOOLS

This data sheet will assist you in determining which tool to use for pinching and / or sealing your tubing.

GENERAL INFORMATION

When considering the use of a tool to pinch, pinch-off and / or hermetically seal your tubing, there are a number of factors to consider, depending upon the tube material, material hardness and tube diameter.

Examples of typical tube pinching and sealing applications include:

- 1) Pinch tubing to stop pressure or vacuum flow while the tube is soldered or brazed, but tube separation (pinch-off) is not required or desired.
- 2) Pinch tubing to stop pressure or vacuum flow while the tube is soldered or brazed, but tube separation (pinch-off) is performed in a separate operation downstream from the soldered or brazed position of the tube.
- 3) Pinch tubing to the point of tube separation (pinch-off), followed by a secondary operation involving solder, braze or epoxy to achieve a hermetic seal.
- 4) Pinch tubing to the point of tube separation (pinch-off) and achieve a hermetic seal (cold-weld) with NO secondary sealing operation performed.

Tool recommendations for each of the examples listed above

Example #1

Pinch tubing to stop pressure or vacuum flow while the tube is soldered or brazed, but tube separation (pinch-off) is not required or desired.

Typically, this is the procedure used when manufacturing air conditioner coils or condensers. There are 2 pneumatic tool models recommended to stop the pressure or vacuum flow while soldering or brazing is performed.

Model #1 (BC-series)

BC-004 Ball-Crimp Tool (for soft copper or aluminum tubing up to ¼” diameter) or

BC-006 Ball Crimp Tool (for soft copper or aluminum tubing up to 3/8” diameter).

Both tools are equipped with a “reverse-action” pneumatic power pack. This simply means that the jaws are in the “closed” position when the actuator handle is in the “released” position, thereby allowing the tool to “clamp” onto the tubing and allowing the technician to have both hands free to perform the secondary sealing operation (solder, braze, etc.). Below are 2 images of the BC-004 tool, as well as an image of the typical crimp achieved with this tool.



You will note that the pinched tubing is NOT fatigued to the point of separation. Typically, the tube is soldered or brazed downstream from this pinched area, and may or may not be cut-off, depending upon the application. The tool remains clamped on the tubing during solder operation.

Example #2

Pinch tubing to stop pressure or vacuum flow while the tube is soldered or brazed, but tube separation (pinch-off) is performed in a separate operation downstream from the soldered or brazed position of the tube.

Typically, this is the procedure used when manufacturing air conditioner coils or condensers. The pneumatic tool model shown below is recommended to stop the pressure or vacuum flow while soldering or brazing is performed.

Model #PTX-512 pneumatic tool utilizes a straight pinch jaw (as opposed to the ball-shaped jaw used on the BC-series tools). The advantage to using the PTX-512 tool is that the pinched section runs straight across the tube and will NOT deform the tube, as often happens with the Ball crimp jaw. The pinched area is NOT fatigued to the point of tube separation, and may be cut-off downstream from the pinched area.



(PTX-512 continued)

The PTX-512 can be used on tubing up to ¼” diameter. This tool is equipped with a “reverse-action” pneumatic power pack. This simply means that the jaws are in the “closed” position when the actuator handle is in the “released” position, thereby allowing the tool to “clamp” onto the tubing and allowing the technician to have both hands free to perform the secondary sealing operation (solder, braze, etc.). The tool remains clamped on the tubing during solder operation. The tool is also available with a standard-actuated power pack or footswitch controlled power pack.

Example #3

Pinch tubing to the point of tube separation (pinch-off), followed by a secondary operation involving solder, braze or epoxy to achieve a hermetic seal.

Applications that require the tubing to be pinched-off and sealed are generally associated with vacuum applications. This tool is generally used to pinch-off copper tubing, but **ONLY** when the tubing is **NOT** under vacuum or pressure. The pinched joint produced with this tool will **NOT** provide a guaranteed hermetic seal. A secondary solder or braze operation must be performed before subjecting the tubing to vacuum or pressure.

Model #PO-004 or #PO-006 are pneumatic pinch tools that utilize a set of straight pinch-off jaws. This tool will pinch and separate the tubing to prepare it for the application of solder or braze to provide the hermetic seal. The PO-004 is recommended for use on soft tubing up to ¼” diameter. The PO-006 is recommended for use on soft tubing up to 3/8” diameter.

Both tools are available with hand-lever controlled or footswitch-controlled power packs.

PO-004 (Below)



PO-006 (Below)



Example of tube Pinched-off with PO-series Jaws



Example #4

Pinch tubing to the point of tube separation (pinch-off) and achieve a hermetic seal (cold-weld) with NO secondary sealing operation performed.

Applications that require the use of a **hydraulic tool** to pinch-off and seal soft copper tubing are generally very critical applications, and the tubing must yield a true cold-welded (hermetic) seam. For these situations, the #HY-series hydraulic / pneumatic tools are the recommended choice.

The #HY-series tools are available in 3 sizes. **HY-187** (for 0.187" diameter tubing or smaller), **HY-250** (for 0.250" diameter tubing or smaller), and **HY-500** (for 0.375-0.500" diameter tubing), HY-750 (0.675" – 0.750" diameter tubing). Each tool can be teamed up with either the "standard" pump (foot peddle mounted on top of the pump) or the optional "Remote footswitch" model.

The hydraulic pumps are actuated via compressed air to generate crimp forces of 3800-4200 p.s.i., depending upon the application. The standard pinch jaw incorporates a set of round, carbide rollers to compress the tubing and cold-weld the joint. Due to the high pressure applied to the tubing, the best results will be achieved by lubricating the rollers with water, light machine oil or any acceptable lubricant prior to pinching the tube.

Whenever the HY-series tools are used to pinch and seal tubing, NO secondary sealing operation (solder, braze, etc.) should be performed, as heating the pinched area will compromise the hermetic seal. If you wish to cover the sharp edge of the pinched area, we recommend using either epoxy or plastic caps. Once again, HEATING THE PINCHED SECTION OF THE TUBING IS NOT RECOMMENDED.

Complete tool (below) (Pinch jaw, bottom view) Pinch jaw and housing, top view



The HY-series hydraulic pinch-off tools are sold as a complete system. Tools used with any hydraulic pump, other than the one supplied, will void the warranty and tool performance will not be supported.

OVERVIEW

Regardless of the application, samples of the tubing to be pinched must be sent to Custom Products & Services, Inc. for testing and evaluation. Orders will not be accepted until this testing procedure is completed and a formal quotation is issued.

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