Imperial's 370-Ffl triple head tube bender incorporates an adjustable tube clamp hook that is repositioned for each size of tubing. This feature ensures an optimal bend radius for each size of tubing, which eases installation in tight quarters, minimizing the length of tube required for the connection.

Accurate tube degree and positioning marks on the tool enable the user to make precision centerline bends. The offset handles simplify fabrication of 180° bends in one swift motion.

Applications

The 370-FH bender can be used for bending copper, aluminum, steel, stainless steel and other tubing of bending temper (annealed). Avoid use with extremely thin wall and/or hard temper tubing.

General Operating Instructions

The tube bender comes with the tube clamp hook positioned for the smallest diameter tube. When bending any other diameter, the tube clamp hook must be repositioned.

To reposition tube clamp hook, loosen tube clamp screw far enough to move clamp hook and insert into appropriate clamp stop and retighten clamp screw. The diameter of tube is indicated at the bottom of clamp on form wheel as shown in Fig. 1.

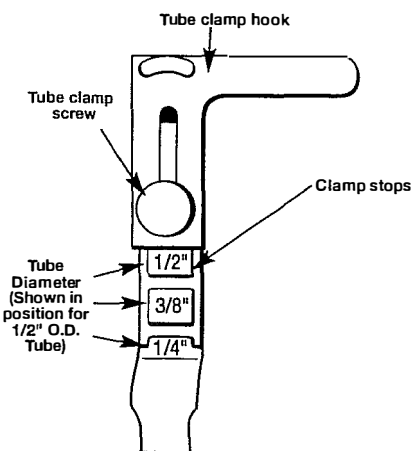


Fig. 1

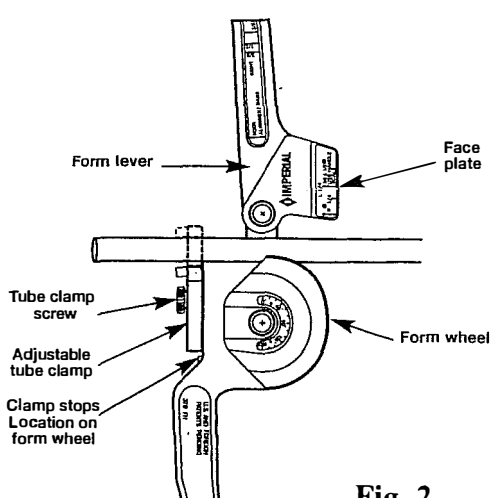


Fig. 2

Raise form lever. Position tubing in groove as shown. It is important that the tube is engaged with the tube clamp hook to prevent slippage Fig. 2.

Lower the form lever until the "0" on the form lever and form wheel are aligned. Fig. 3. Pull the form lever down until the desired bend angle is obtained. Degree of bend is indicated when the "0" mark on the form lever aligns with the desired degree graduation on the form wheel. Fig. 5A.

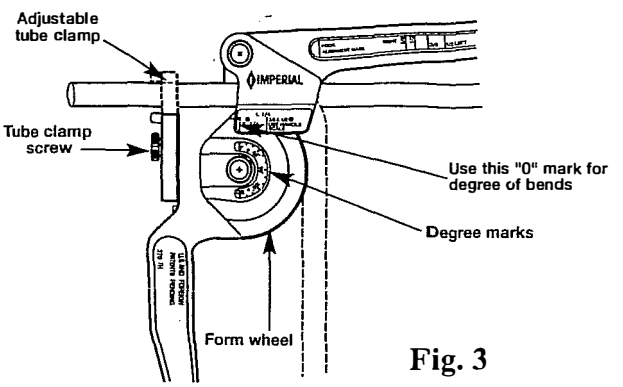


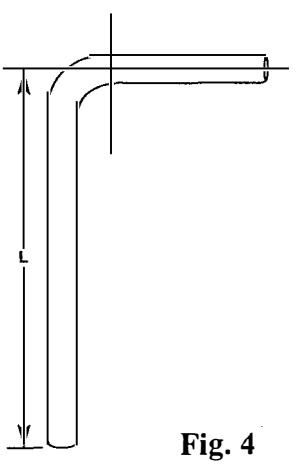
Fig. 3

Instructions for Making Accurate 90° Centerline Bends

90° Bends For 1/4" Tubing

Determine the desired centerline dimension (Dimension "L" in Fig. 4)

Measure from end of the tube at "L" distance and place a mark on the tube (Mark "L")



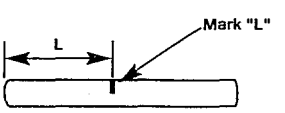


Fig. 4

Position tube in bender as shown in Fig. 5. If the end measured is left of the tube-clamping hook the measured mark "L" should be directly under the "L" graduation on the form lever faceplate as shown in Fig. 5. With a steady motion, pull form lever handle around until the "0" mark on the form lever is directly opposite the 90° graduation on the form wheel Fig. 5A.

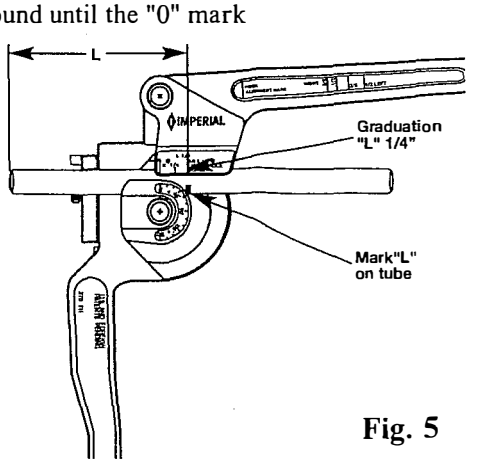


Fig. 5

If the end that is to be measured is to the right of the tube clamping hook, mark the tube at "R" distance and position directly below the graduation "R" located on the form lever as shown in Fig. 6. then proceed with bend in the same manner as above.

90° Bends for 3/8" & 1/2" Tubing

Place mark "L" on the tube in the same manner as required for the 1/4" size. For a bend to the left of the tube-clamping hook refer to Table 1.

Subtract from the original mark "L" the appropriate length, and place a second mark "B" on the tube. This second mark "B" should be placed on the right edge of the tube-clamping hook as shown in Fig. 7.

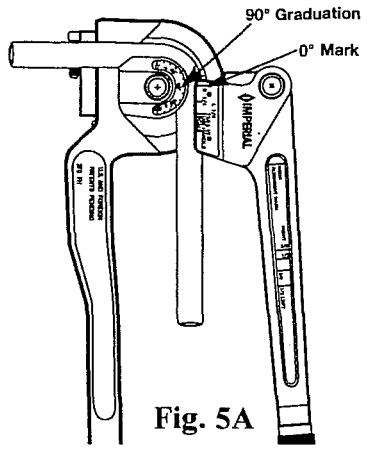


Fig. 5A

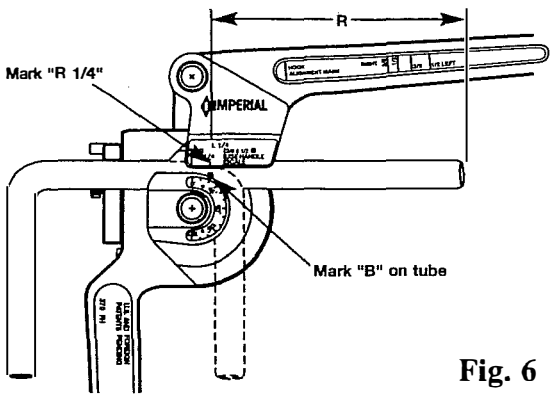


Fig. 6

For bends to the right of the tube clamping hook, place mark "R" on the tube in the same manner as required for the 1/4" size. **Add** to your mark the distance shown in Table 2, placing a second mark "B" on the tube. This second mark "B" should be placed on the right edge of the tube-clamping hook as shown in Fig. 7.

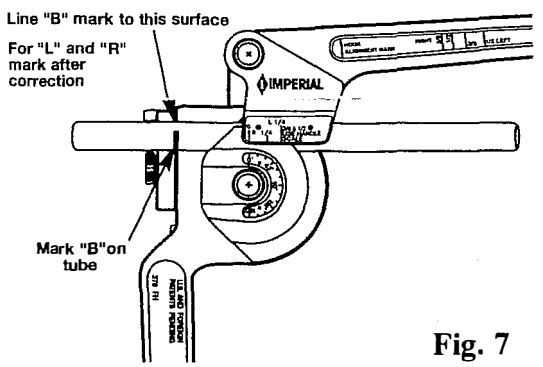


Fig. 7

Lower the form lever until the "0" mark on the form lever and form wheel are aligned, then pull the form lever down until the desired bend angle is obtained. Degree of bend is indicated when the "0" mark on the form lever aligns with the desired degree graduation on the form wheel Fig. 5A.

As an alternative to the calculation table for making right or left bends, a scale on the form lever handle is provided. After mark "L" or "R" is determined, place the mark even with appropriate graduation "L"(left) or "R" (right) for the appropriate tube diameter. Place the second mark "B" on the tube at the "HOOK ALIGNMENT MARK", as shown in Fig. 8.

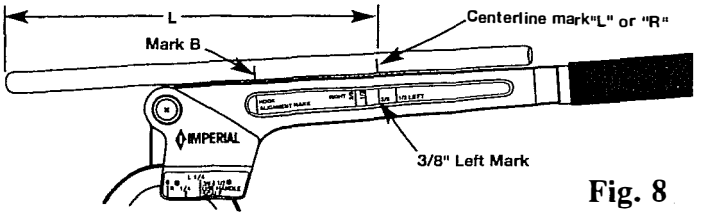


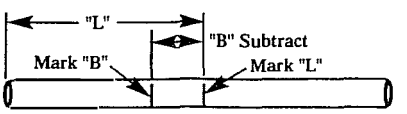
Fig. 8

Example — See Fig. 8. For a bend left of the tube clamping hook, using 3/8" tubing. Measure the required distance from the end of the tube and place mark "L". Hold the handle to the tube with mark "L" adjacent to the "3/8 Left" mark. Make a second mark "B" on the tube adjacent to the "HOOK ALIGNMENT MARK". Place tube in bender with the second mark "B" aligned with the right edge of the tube clamp hook. Fig. 7.

For bends left of tube clamp hook

Table 1. This is for "L" Dimension and must be **subtracted** from the centerline requirement

Tube Diameter	Mark "B" Fractions (Decimal)
3/8"	2-35/64" (2.546")
1/2"	2-29/32" (2.906")

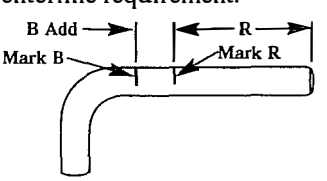


Example: The "L" Dim.(Centerline) is 9-1/2" (9.5") and the tube is 1/2" O.D. Refer to Table 1 under Mark "B" and subtract 2-29/32" (2.906"). 9-1/2" (9.5") - 2-29/32" (2.906") = 6-19/32" (6.594")

For bends right of tube clamp hook

Table 2. This is for "R" Dimension and must be **added** to the centerline requirement.

Tube Diameter	Mark "B" Fractions (Decimal)
3/8"	2-1/16" (2.065")
1/2"	2-17/64" (2.265")



Length Correction Factor for 90° Bends

To arrive at the exact tube length to fabricate a circuit, the following method maybe used.

Add all center-to-center dimensions of tube circuit.
For each 90° bend, subtract the amount shown in chart "A".
Circuits are dimensions to square corners.
Therefore the tube is always **less.**

Chart A

Tube Size	Bend Radius	Correction Factor
1/4"	11/16"	.295
3/8"	1-1/8"	.480
1/2"	1-1/2"	.643