

# INSTRUCTIONS FOR 364-FHB LEVER TYPE TUBE BENDER

Imperial 364-FHB lever type tube bender incorporates a start position of approximately 100° for ease of bending, and a swivel handle mechanism that permits repositioning one handle when the handles approach parallel. This feature simplifies fabricating bends up to 180° by reducing effort, improving control and eliminating crossing of handles.

This tube bender can be used for bending steel, stainless steel, copper, aluminum, and other metal tubing. Avoid use with extremely thin walled and hard temper tubing. (Type M tubing is not recommended for bending.)

## TO BEND TUBING

1. Raise the swivel handle and position tubing into the guide groove. It is important that the tube is engaged with the tube clamp to prevent tube slippage. (See Fig. 1.)
2. Lower the swivel handle until the "0's" on the form wheel and form lever are aligned, then pull the handle down until the desired bend angle is obtained. Degree of bend is indicated when the "0" mark on the form lever aligns with the degree mark on the form wheel. (See Fig. 2.)
3. For ease in completing bends greater than 90° (180° max.), reposition the swivel handle by rotating counterclockwise. (See Fig. 3.) An over center position automatically locks the swivel handle in place when bending force is applied.

## 90° BENDS

1. Measure from end of tube to where you want the first bend and place a mark on the tubing at that exact point.
2. Position tube in bender. If the end from which you measured is left of the tube clamp, the measured mark should be directly over graduation "L" located on the right side of the form lever. (See Fig. 4.)
3. If the end from which you measure is placed to the right of the tube clamp, the measured mark should be directly over graduation "R" on the form wheel. (See Fig. 4.)
4. With a steady motion, pull the swivel handle around until the "0" mark on the swivel handle is directly opposite the 90° mark on the form wheel. (See Fig. 5.)

## 45° BENDS

1. Measure from end of tube to where you want the first bend and place a mark on the tubing at that exact point.
2. Position tube in bender. If the end from which you measured is left of the tube clamp, the measured mark should be directly over graduation "L" located on the right side of the form lever. (See Fig. 4.)
3. If the end from which you measure is placed to the right of the tube clamp, the measured mark should be directly over graduation "R" on the form wheel. (See Fig. 4.)
4. With a steady motion, pull the swivel handle around until the "0" mark is directly opposite the 45° mark on the form wheel. (See Fig. 5.)

## DOUBLE 45° OR 90° OFFSET BENDS

When forming a tube offset, it is necessary to make two bends. Mark the tube at both bend locations before proceeding. Whenever possible, use 45° bends.

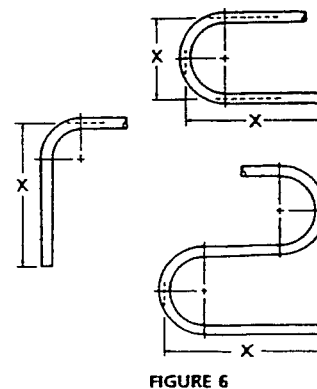
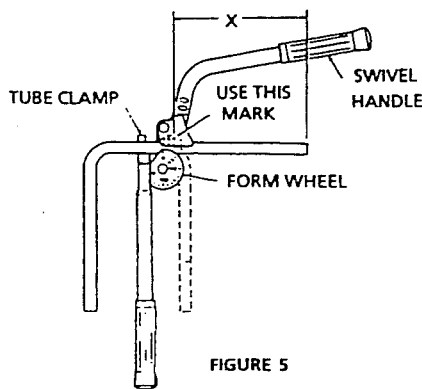
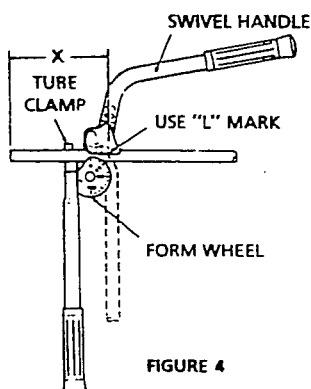
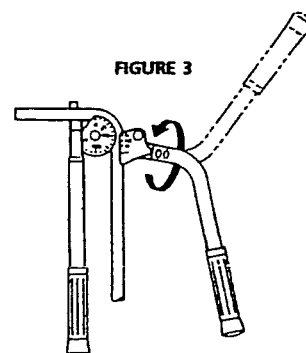
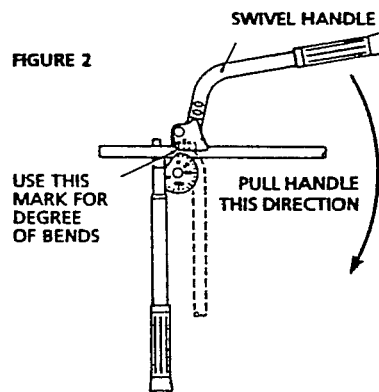
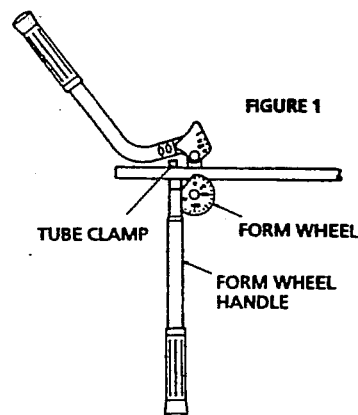


FIGURE 4

FIGURE 5

FIGURE 6

### FIGURING OFFSET BENDS

1. Refer to the offset bend calculator chart below. Note that the "Y" dimension in the chart gives the total amount of offset required. The "X" dimension in the chart gives the length of tubing you will use for a given application.
2. To figure out the length of tubing which is needed to meet your offset requirements, follow this example: For a 45° angle with a 2½" offset, refer to the chart under "Angle of offset 45°". Next, refer to the "Y" dimension and find 2½" offset. The figure to the right under "X" dimension will be the length of tubing you will use. In this example, the required length is 3 17/32."
3. Now determine where you want the center of the offset bend on the tube. Make a reference mark "A" at this point. (See "A" in Fig. 8.) From this point, measure your "X" dimension (length of tubing determined in step 2) and make a mark "B" (See "B" in Fig. 8.) You are now ready to make the bends.

**NOTE:** The "Offset bend calculator" chart allows you a "Y" dimension of up to 6 inches. If your offset requirements should exceed this number, you must choose an offset from the table that is a multiple of the offset you need. For example, if you have an offset requirement of 20," find the multiple (5") on the chart under dimension "Y." Take the "X" dimension to the right of this and multiply by 4. This will be the length of tubing you need for your offset. In this case it is 28 1/4."

FIGURE 7

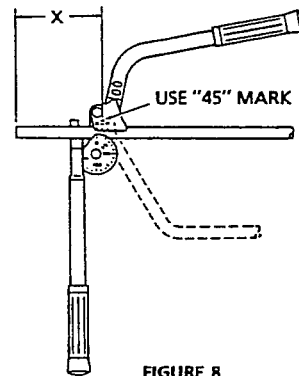
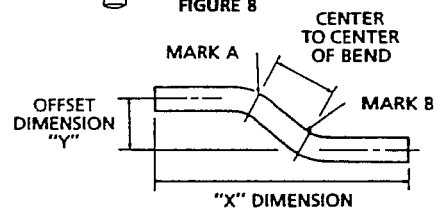


FIGURE 8



OFFSET BEND CALCULATOR

| ANGLE OF OFFSET 30°                     |                        | ANGLE OF OFFSET 45°                     |                        | ANGLE OF OFFSET 30°                     |                        | ANGLE OF OFFSET 45°                     |                        |
|---|------------------------|---|------------------------|---|------------------------|---|------------------------|
| AMOUNT OF OFFSET (Y Dimension) (Inches) | (X Dimension) (Inches) | AMOUNT OF OFFSET (Y Dimension) (Inches) | (X Dimension) (Inches) | AMOUNT OF OFFSET (Y Dimension) (Inches) | (X Dimension) (Inches) | AMOUNT OF OFFSET (Y Dimension) (Inches) | (X Dimension) (Inches) |
| 1                                       | 2                      | 1                                       | 1-13/32                | 3-5/8                                   | 7-1/4                  | 3-5/8                                   | 5-1/8                  |
| -1/8                                    | 2-1/4                  | -1/8                                    | 1-19/32                | -3/4                                    | 7-1/2                  | -3/4                                    | 5-1/16                 |
| -1/4                                    | 2-1/2                  | -1/4                                    | 1-25/32                | -7/8                                    | 7-3/4                  | -7/8                                    | 5-15/32                |
| -3/8                                    | 2-3/4                  | -3/8                                    | 1-15/16                | 4                                       | 8                      | 4                                       | 5-21/32                |
| -1/2                                    | 3                      | -1/2                                    | 2-1/8                  | -1/8                                    | 8-1/4                  | -1/8                                    | 5-27/32                |
| -5/8                                    | 3-1/4                  | -5/8                                    | 2-5/16                 | -1/4                                    | 8-1/2                  | -1/4                                    | 6                      |
| -3/4                                    | 3-1/2                  | -3/4                                    | 2-15/32                | -3/8                                    | 8-3/4                  | -3/8                                    | 6-3/16                 |
| -7/8                                    | 3-3/4                  | -7/8                                    | 2-21/32                | -1/2                                    | 9                      | -1/2                                    | 6-3/8                  |
| 2                                       | 4                      | 2                                       | 2-13/16                | -5/8                                    | 9-1/4                  | -5/8                                    | 6-17/32                |
| -1/8                                    | 4-1/4                  | -1/8                                    | 3                      | -3/4                                    | 9-1/2                  | -3/4                                    | 6-23/32                |
| -1/4                                    | 4-1/2                  | -1/4                                    | 3-3/16                 | -7/8                                    | 9-3/4                  | -7/8                                    | 6-29/32                |
| -3/8                                    | 4-3/4                  | -3/8                                    | 3-11/32                | 5                                       | 10                     | 5                                       | 7-1/16                 |
| -1/2                                    | 5                      | -1/2                                    | 3-17/32                | -1/8                                    | 10-1/4                 | -1/8                                    | 7-1/4                  |
| -5/8                                    | 5-1/4                  | -5/8                                    | 3-23/32                | -1/4                                    | 10-1/2                 | -1/4                                    | 7-7/16                 |
| -3/4                                    | 5-1/2                  | -3/4                                    | 3-7/8                  | -3/8                                    | 10-3/4                 | -3/8                                    | 7-19/32                |
| -7/8                                    | 5-3/4                  | -7/8                                    | 4-1/16                 | -1/2                                    | 11                     | -1/2                                    | 7-25/32                |
| 3                                       | 6                      | 3                                       | 4-1/4                  | -5/8                                    | 11-1/4                 | -5/8                                    | 7-31/32                |
| -1/8                                    | 6-1/4                  | -1/8                                    | 4-13/32                | -3/4                                    | 11-1/2                 | -3/4                                    | 8-1/8                  |
| -1/4                                    | 6-1/2                  | -1/4                                    | 4-19/32                | -7/8                                    | 11-3/4                 | -7/8                                    | 8-5/16                 |
| -3/8                                    | 6-3/4                  | -3/8                                    | 4-25/32                | 6                                       | 12                     | 6                                       | 8-15/32                |
| -1/2                                    | 7                      | -1/2                                    | 4-15/16                |   |                        |   |                        |

**NOTE:** Keep bender bearings and form handle grooves lubricated. Keep oil away from form wheel grooves.

PART NO P-0000182



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