

## INSTRUCTIONS FOR USING *Imperial* No. 400-F 37° FLARING TOOL and 402-F REAMING AND DEBURRING TOOL

**IMPORTANT:** In cutting stainless steel tubing preparatory to flaring, always use a hacksaw instead of a tube cutter. (A tube cutter will tend to harden tubing.) Also be sure burrs are completely removed.

The Imperial No. 400-F Flaring Tool is designed to make 37° flares in 6 sizes of aircraft grade stainless steel tubing (MIL-T-6845), aluminum and all other metal tubing. These are precision flares which conform to aviation standard AND 10061.

Range of sizes of this tool are:

| Size | O.D.<br>Tubing | Size | O.D.<br>Tubing | Size | O.D.<br>Tubing |
|------|----------------|------|----------------|------|----------------|
| 3    | 3/16"          | 5    | 5/16"          | 8    | 1/2"           |
| 4    | 1/4"           | 6    | 3/8"           | 10   | 5/8"           |

To obtain the utmost in precision and for the protection of your flaring tool, it is essential that burrs be removed from inside of tubing before making a flare. No. 401-F Reaming and Deburring Tool is recommended for this purpose.

This Tool is designed to be used with bar for No. 400-F Flaring Tool. The No. 401-F Reamer may be purchased separately or in a kit, No. 402-F, which also contains No. 400-F Flaring Tool.

Operation of the No. 400-F Flaring Tool is as follows:

1. Position gauge (wishbone shaped spacer) on yoke by pivoting correct leg of gauge against operating screw as shown in the sketch (Fig. 1). The thickness of the stop on each leg of the wishbone is such as to allow a predetermined amount of stern travel when operating.

**NOTE:** The difference between the maximum flare diameters as specified in AND 10061 and the outside diameters of the tubing for sizes 3, 4, 5, and 6 are equal. Correspondingly the difference between the maximum flare diameter and the outside diameter of the tubing for sizes 8 and 10 are equal. Therefore only 2 gauging points are required for the range of sizes of the tool.

2. Feed the operating screw into the yoke until the shoulder comes into contact with the gauge point.

3. Slip the yoke over end of die block.

4. Insert tubing into proper opening of die block, using flaring cone as a stop. Tube should be firm against cone, securely clamp the tube, using the clamping screw at the end of the die holder.

\* For 3/16 size only, finger tighten clamp screw, back off flaring cone from tube, then securely



This is a precision tool and should be kept clean at all times.

clamp the tube using the clamping screw at the end of the die holder. If you tighten the tube firmly when cone is in the tube, the tip will break. Bring cone back to position and proceed to step 5.

5. Pivot gauge into its neutral position clearing the shoulder. (Fig 2)

6. Feed the operating screw downward until the positive stop is reached. The combination of the controlled insertion of the tube and the limited travel of the compressor screw produces a proper sized flare.

7. After flaring, lift driving head as far as it will go, at the same time turning counterclockwise with wrench until pin rests on top of feed screw cam. The tool will then burnish the flare for one complete revolution, at which point the pin will drop into original position, allowing feed screw to be backed off sufficiently to remove yoke.

Rollers of this tool should be lubricated with a light oil. When used on aluminum tube it is preferable to use kerosene liberally.

### INSTRUCTIONS for *Imperial*<sup>®</sup> REAMING AND DEBURRING TOOLS

The Reaming and Deburring Tool assures clean-cut reaming on all kinds of tubing. They are especially adapted for aviation, hydraulic and other exacting tube connection work where stainless steel, steel and other metal tubing is used.

These tools are designed to be used in conjunction with the flaring bars furnished with Imperial Flaring Tools as shown below:

| Reaming<br>Tool No. | Used with Bars Furnished<br>on Flaring Tool No's. |
|---------------------|---------------------------------------------------|
| 401-F               | 400-F                                             |
| 438-F               | 437-F; 500-F; 355-F                               |
| 538-F               | 537-F                                             |

#### Operating Instructions:

1. Insert tubing in proper size hole in bar.
2. Slip reaming yoke over bar and align over tubing. Tubing should then be brought up as far as possible against fluted cutters.
3. Clamp tubing securely in flaring bar.
4. Feed cutters down gently by rotating knurled feed screw clockwise.
5. Revolve handle two or three half turns.
6. For harder tubing, repeat steps 4 and 5 as necessary.



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