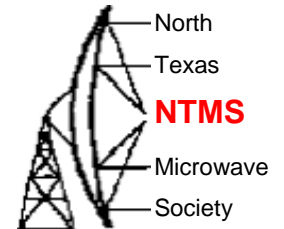


# 80 GHz Dish Feed

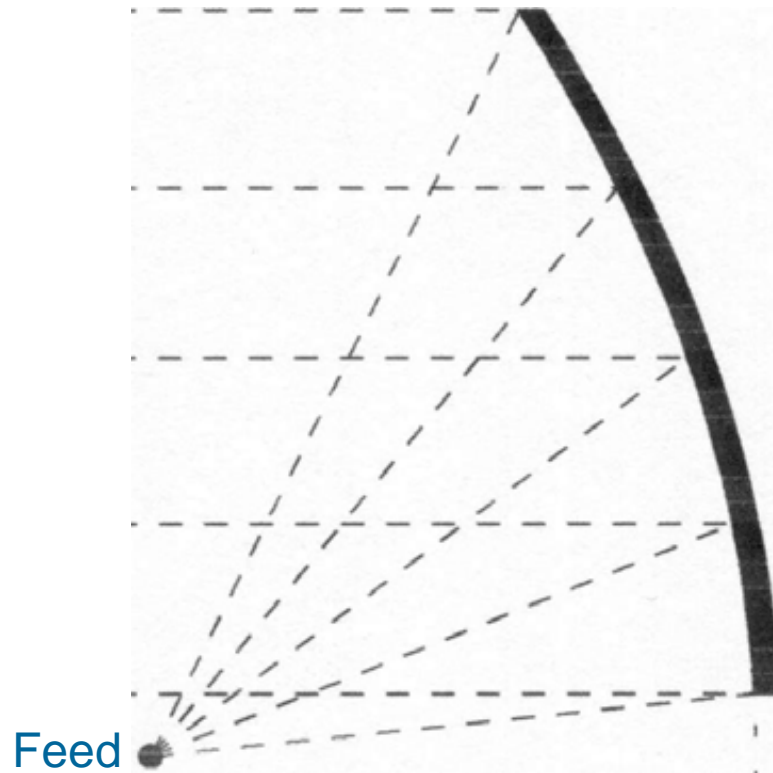
James Hudson  
WA5JAT

# 80 GHz Dish Feed



- Design Requirements
  - Dish Focal Length/Diameter = .7
  - Offset Feed
  - Round Waveguide Input
    - WR-10 Flange Hole Pattern
  - W2IMU “Dual Mode” Configuration

# 80 GHz Dish Feed

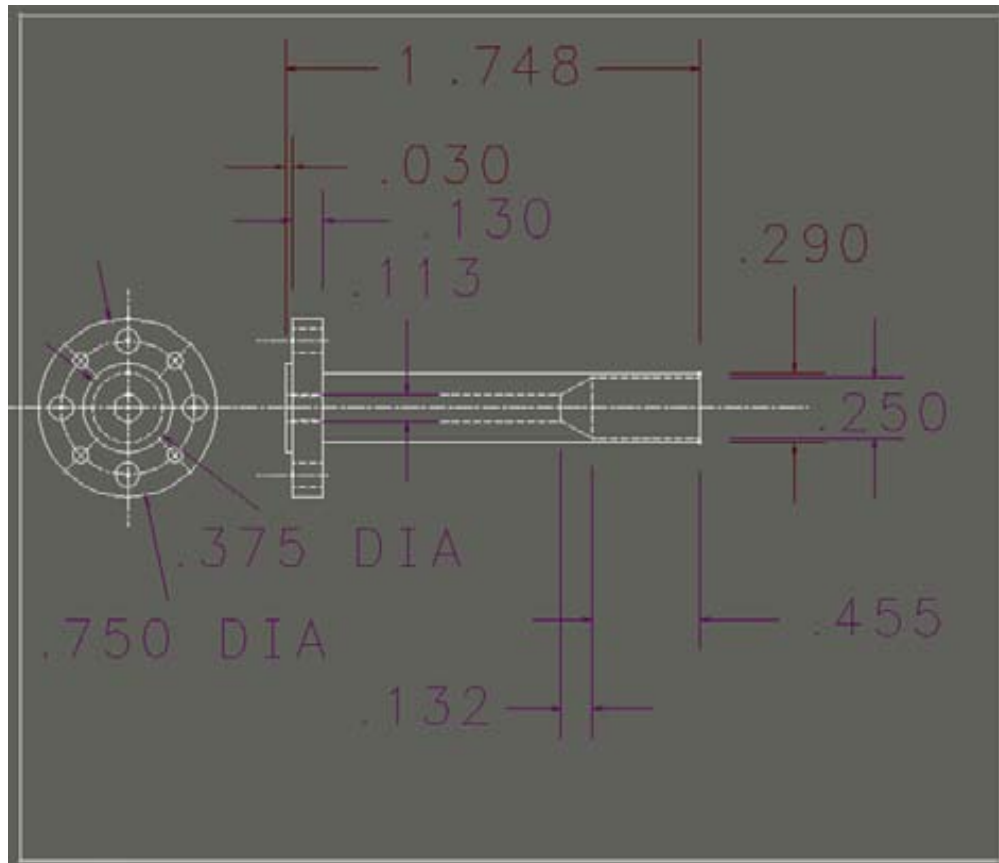
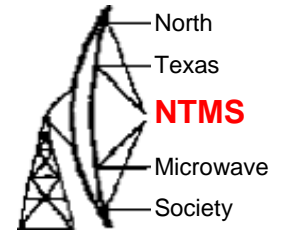


Offset Fed Parabolic Reflector



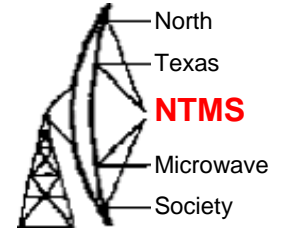
Example of Offset Feed  
This one on 10 GHz

# 80 GHz Dish Feed



W2IMU Dual Mode "Scaled" Feed Dimensions

# 80 GHz Dish Feed



## •Material Selection

- Ease of Machining
  - Brass
  - Aluminum
- Conductivity
  - Silver
  - Aluminum
  - Brass
    - Silver Plating Required
    - Difficult to Impossible

## •Aluminum Chosen

# 80 GHz Dish Feed

## • Manufacturing Steps

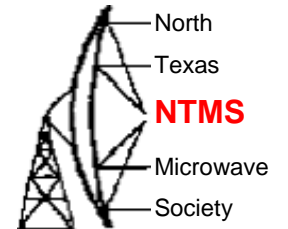
### • Rough Machine

- Saw Stock with Excess Length For Chucking
- Turn Ends to Clean Up
- Center Drill
- Drill Through -  $7/64$  Diameter
- Counter Drill  $1/8$  Diameter



Center Drilling

# 80 GHz Dish Feed



- Manufacturing Steps

- Final Machining

- Install Tail Stock & Center
    - Turn Outside to .290 Diameter
    - Cutoff



Outside Turning

# 80 GHz Dish Feed

- Manufacturing Steps

- Final Machining – Cont'd

- Remove Center and Install Tail Stock Drill Chuck

- Ream



Output Reaming



# 80 GHz Dish Feed

## •Manufacturing Steps

### •Final Machining – Cont'd

- 60 Degree Countersink Output to .455 Depth
- Ream Input .113 Diameter Through
- Countersink with Shop Made Reamer to .455 Depth
- Reverse in Chuck & Cutoff to Length
- Turn Flange



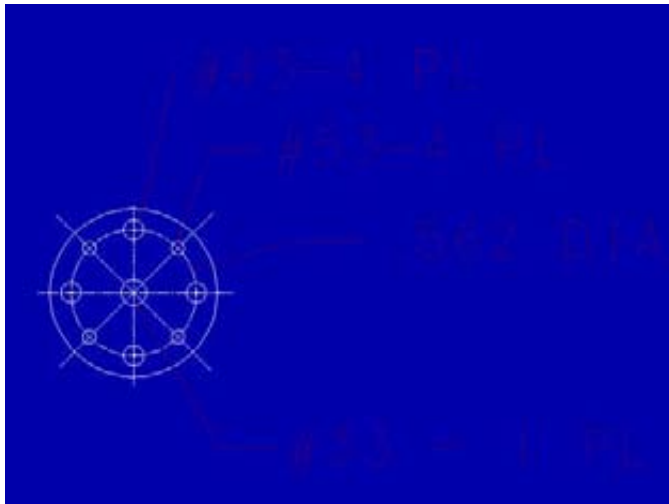
Machined Feed

# 80 GHz Dish Feed

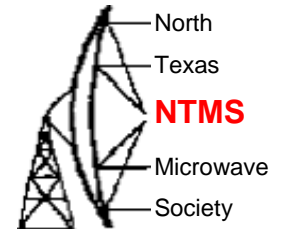
- Manufacturing Steps

- Final Machining – Cont'd

- Apply Commercial Flange & Transfer 8 Holes
    - Tap 4-40 Four Places
    - Index Pins Not Needed



# 80 GHz Dish Feed



## •Comments

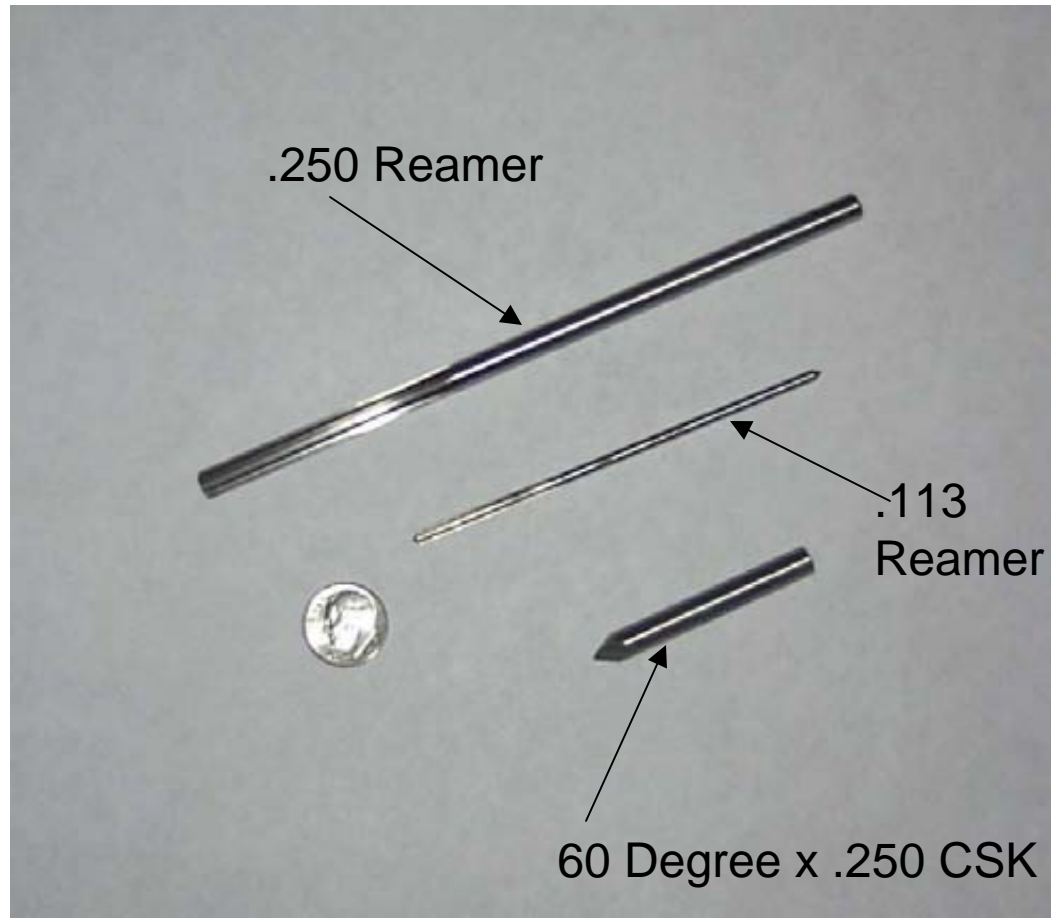
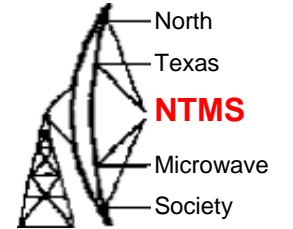
### •Better Tooling Needed For:

- Flange Drill & Tap
  - Need A Way To Assure Centered Hole Pattern on Waveguide
- Inside Diameter Transition
  - Exist



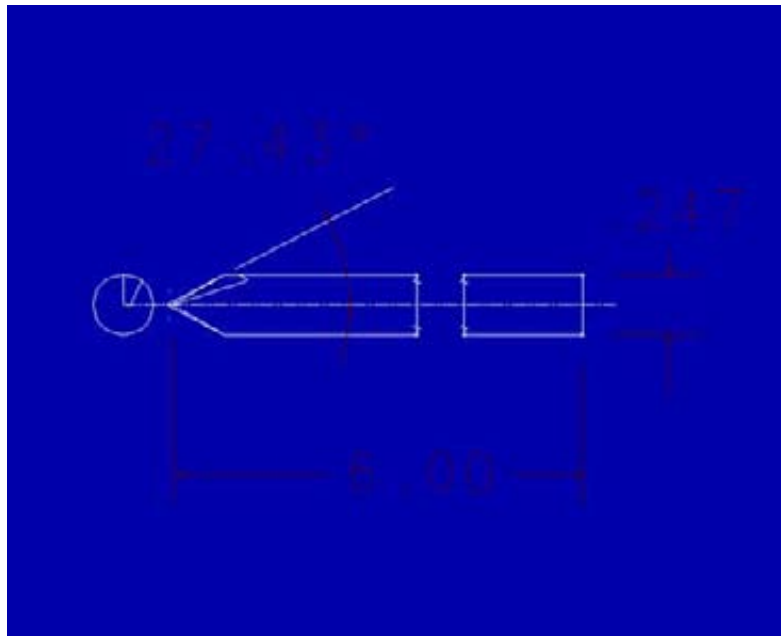
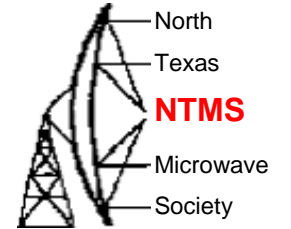
Feed Installed on Mixer

# 80 GHz Dish Feed



Commercial Tooling

# 80 GHz Dish Feed

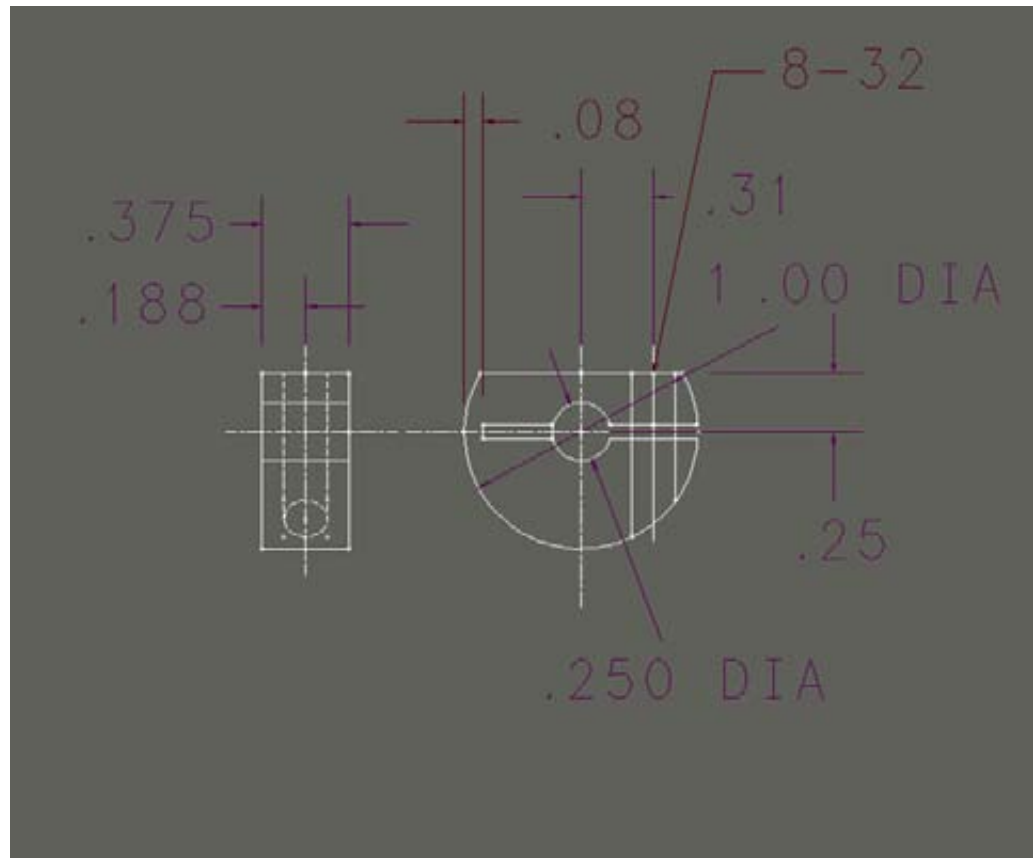
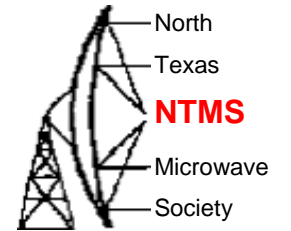


Shop Made Finish Reamer  
for Transition Area



Temporary "Tool Post" Grinder

# 80 GHz Dish Feed



Drill, Ream & Countersink “Depth Stops”