

## Focusing the Small Radio Telescope

Having assembled the dish and feed supports, the focal point of the dish must now be adjusted to maximize the antenna efficiency. Some adjustment can be made by moving the feed in the grooves located at the ends of the feed supports. This will not provide enough adjustment to properly focus the dish. A simple modification is necessary and can be completed by carefully following the steps given below.

Step 1: Accurately measure the focal length of the dish and compare the results to the values given below:

Table 1: Calculated focal length based on dish geometry

Diameter of Dish (feet)	Focal Length (inches)
10 (XI-10)	47.6
7.5 (XI-7)	37.7



The focal length of the dish can be calculated using the formula for the focal length of a parabola given in any math handbook.

$$f = D^2/16x$$

D = diameter of the dish

x = depth of the dish (see figure)

Note: Finding the exact focal length of the dish requires knowing the precise location of the phase center of the feed. For this application the phase center is located at the position of the first scalar ring in the feed. The focal length can be found by measuring from this point to the center of the dish.

Step 2: The feed must now be moved by an amount equal to the difference between the actual focal length given in the table above and the measured focal length. The length of the feed supports should be modified accordingly.

## Feed Support Bracket\* (7.5 foot dish)



The feed supports for the Kaul-Tronics X1-7 only need to be adjusted by about 1.75 inches. A bracket should be fabricated to hold the feed support flush to the outer edge of the dish.

The bracket shown in the figure was purchased at a local hardware store and required no special modifications.

**\* Prior to summer 2001 shipments. For shipments later than summer 2001, see the notice below.**

## Feed Support Bracket\* (7.5 foot dish)



The Kaul-Tronics X1-7 requires a 3-inch extension of the feed supports.

The bracket shown in the figure was also purchased at a local hardware store. This bracket is constructed from 1/8 inch steel making it stiff enough to resist bending.

**\* Prior to summer 2001 shipments**

## **NOTICE:**

As of summer 2001, the Feed Support Design has changed. The KTI model XI-7 now has feed support attachments five inches inside the outer edge of the dish. Feed support standoffs for the new design are available from [CASSI](#)

### Feed Support Standoffs (7.5 foot dish)

To focus the XI -7 dish as currently designed; 1 3/4-inch standoffs are shipped with the SRT. The standoffs are 3/4 inches in diameter with a 1/4-inch bore. 3 1/2 inch x 1/4-inch bolts is also supplied.



They are attached between the feed support strut and the dish surface as shown in the image below.

