

# Scope Design Guide for Trusses

This guide will help you get the most out of our clamps. The clamps are designed to give you superior rigidity in you trusses, and ease of use when putting up or taking down your scope.

1. With mirror size and focal length known, one of the next considerations is the diameter of your truss tubes. The larger the tubes the less the trusses will flex under the load of the Upper Telescope Assembly (UTA), often called the secondary cage.

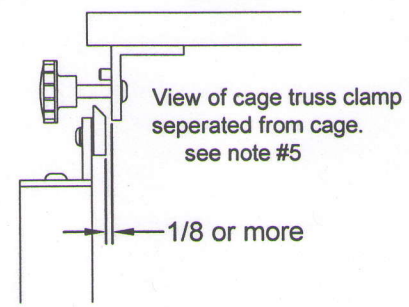
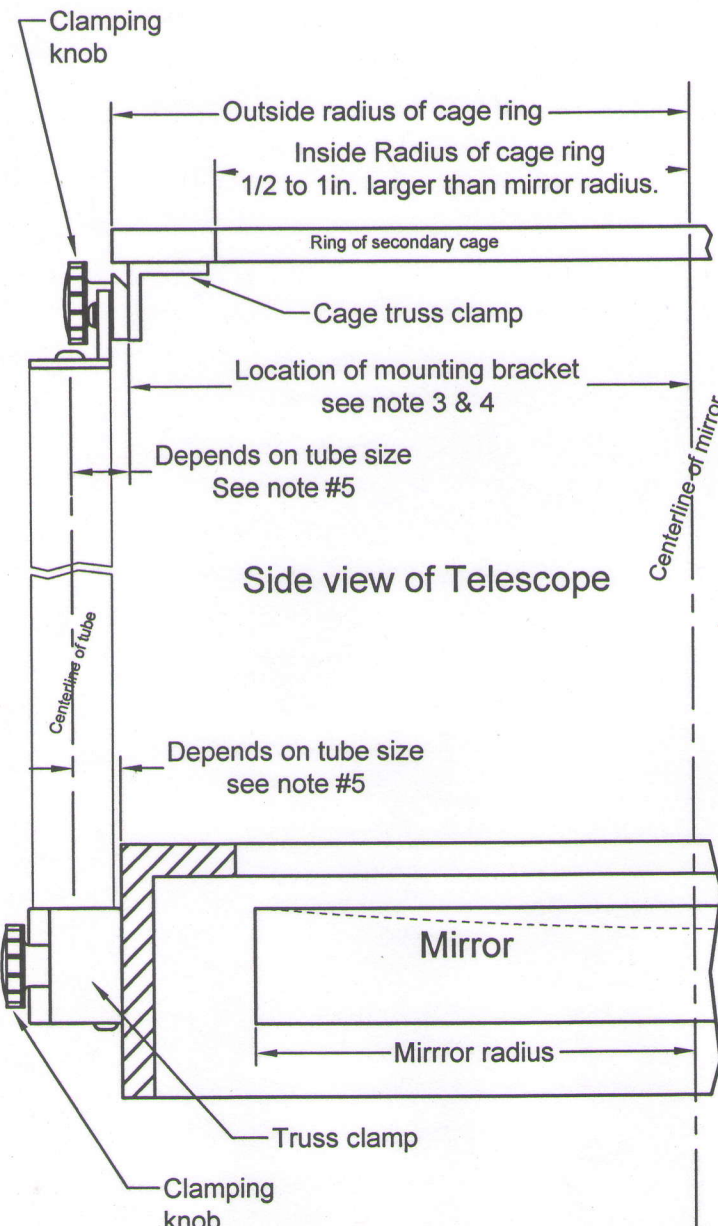
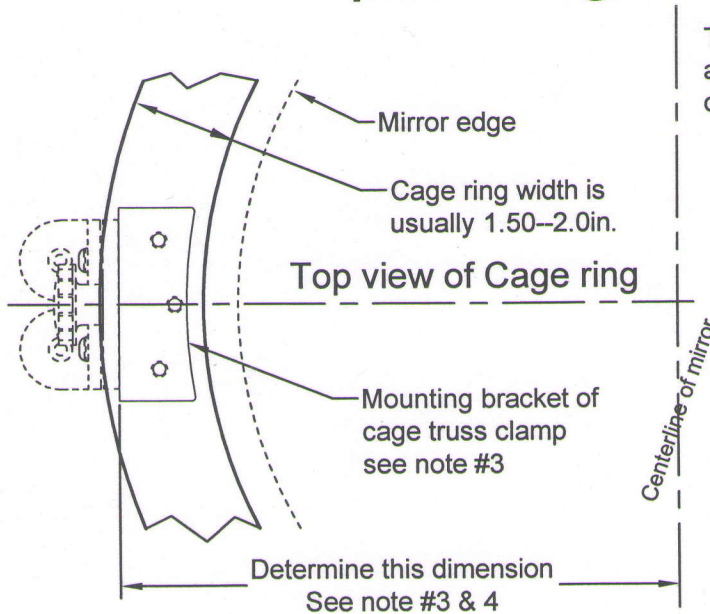
2. With tube size known, the secondary cage design is next. Establish the inside and outside diameter of the rings that form the backbone of the cage. Ring width and thickness are largely dependent on the material used, but they need to resist the significant forces from the spider. As you tension the spider to support the secondary mirror, cage rings that are not well supported or undersized may warp.

3. Locate the position of the mounting bracket for the cage truss clamps, see diagram upper left, "Top view cage ring". Location of the mounting bracket is not critical, but the mounting holes should not be too close to the edge of the rings for strength. I prefer to make a full size sketch of the ring and place the mounting bracket where it looks good, much like the sketch in the upper left.

4. The location of the mounting bracket on the cage ring indirectly determines the size of the mirror box, so it is important. The closer the bracket is mounted to the inside of the cage ring the smaller the mirror box, and we all like a smaller, lighter mirror box and telescope. However, it is not recommended to locate the clamping knob under the cage ring.

5. Review the mechanical drawings for the clamp size that fits your truss tubes. Find the dimensions from the center of the truss tubes and with a little math the outside dimension of the mirror box can be established. It is recommended to add at least 1/8 in. to each side of the mirror box, this will encourage the cage truss clamps to disengage when you loosen the clamping knobs. See view below, showing the cage truss clamps separated and in position for assembly.

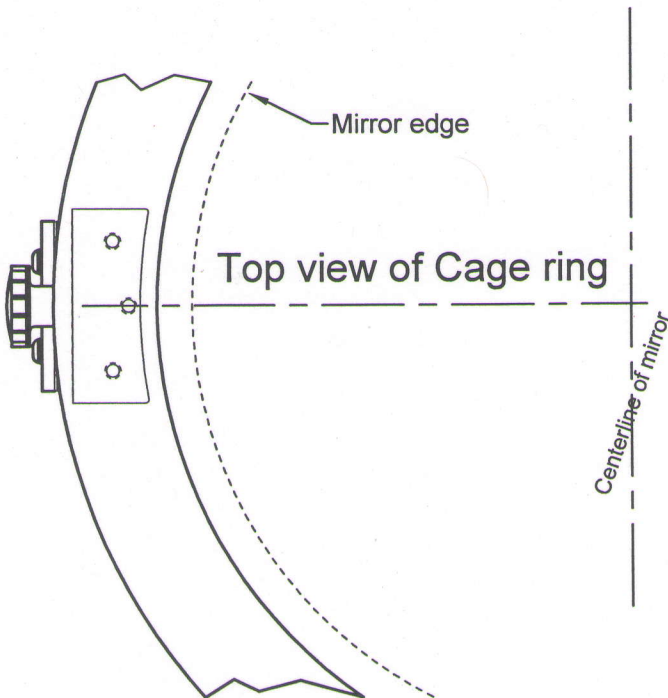
Planning your design to this detail will ensure that assembling your scope in the field when daylight is short will be a pleasure not a headache.



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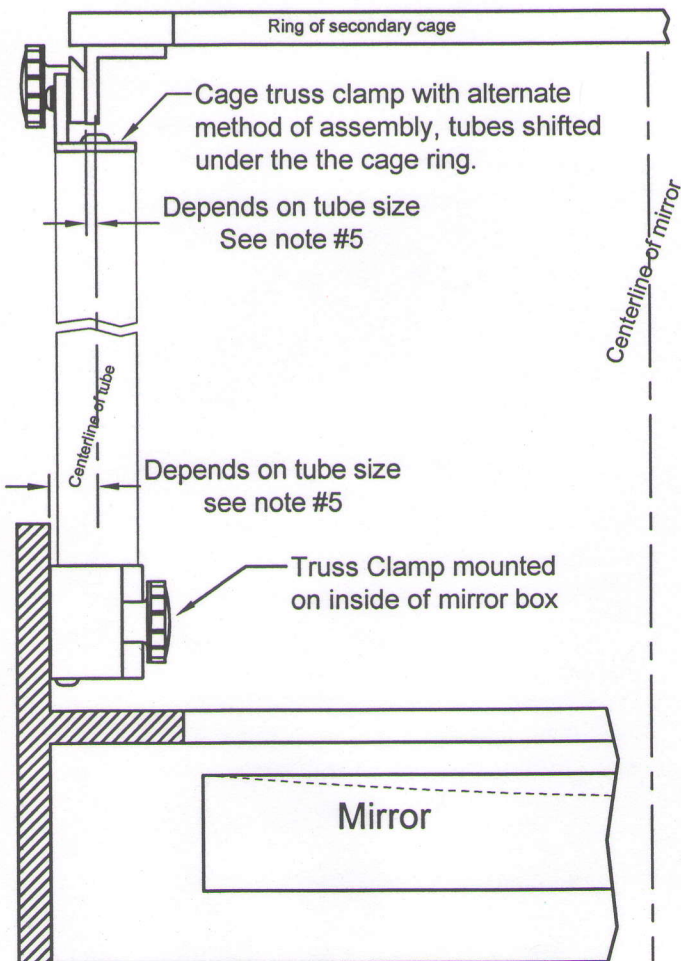
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## Tube clamps located inside of mirror box



This guide shows the truss clamps mounted on the inside wall of the mirror box, which drives the mirror box to grow to about the same size as the secondary cage.

### Side view of telescope



This has two advantages

1. The mirror box is easier to pack away during transport with the outside of the mirror box clean of items that can snag. Other items can pack up against the mirror box more tightly.

2. The cage can nest on top of the mirror box for transport. This can provide a convenient way to protect the focuser and cage rings during transport.



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