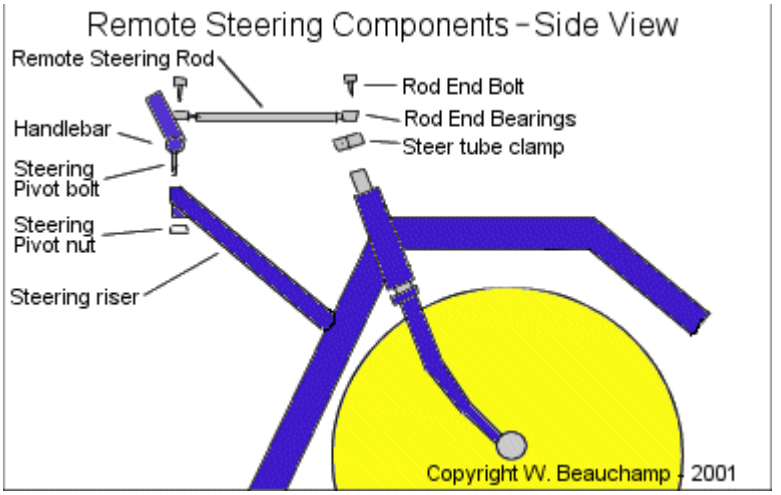
Remote Steering Construction

By Warren Beauchamp

Remote steering is used to move the handlebars to a location where it does not interfere with knees, and to eliminate tiller steering. It is most frequently used in a fairing as there is no room for wide handlebars or tiller steering in those applications. Occasionally it is used on non-faired low racers when the rider prefers an aerodynamic position and non-tiller steering. There are three ways to make a tiller steering system, but I prefer the rod method so that's what this page will be explaining.

- **Universal joint**
  Pros: No steering slop, strong.
  Cons: Steering pivot is vertical rather than horizontal, can be heavy.
- **Cables or Chains**
  Pros: Can be lightweight, easy to make.
  Cons: Can have a lot of slop, prone to failure.
- **Rod**
  Pros: Relatively lightweight, strong.
  Cons: Must use aircraft quality rod end bearings to prevent slop.

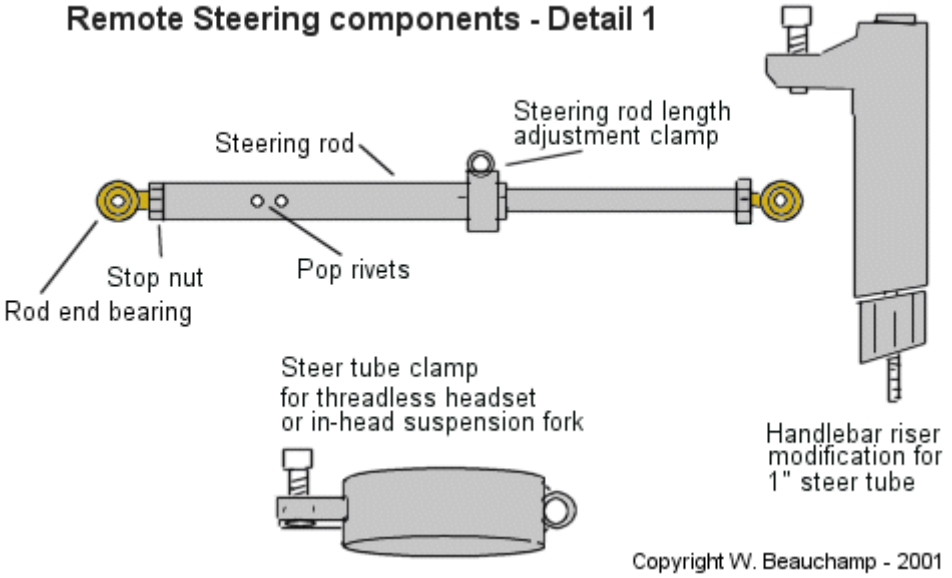
The basic configuration of the rod type of remote steering consists of a small stub on the steer tube to attach the rod to, a rod with a pivot at each end, and an attachment point for the rod on a set of remotely mounted handlebars. Changing the distance between the rod attachment points and the pivot points on either end of the steering system will change the sensitivity of the steering



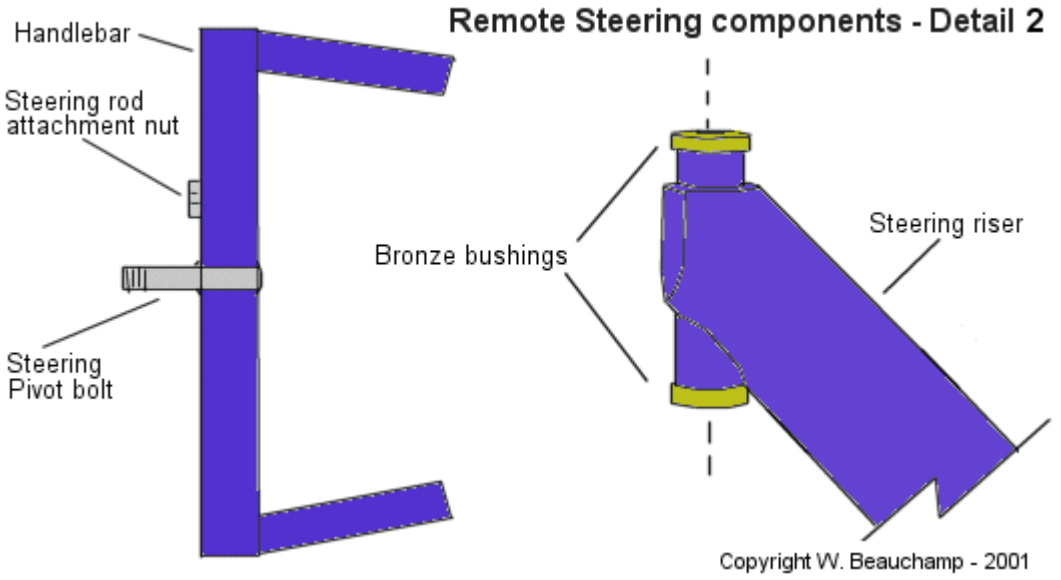
The pivots points are normally rod end bearings, which are available at your neighborhood hardware store. The hardware store variety of rod end bearing have a lot of play in the bearings though, which will cause the steering to be sloppy, so I recommend the aircraft quality rod end bearings, available at Wicks aircraft or other aviation suppliers.

To attach the rod end bearing to the steer tube, a standard solid aluminum handlebar riser can be cut and filed to provide a flat surface for the bearing to rest on. A hole can be drilled and tapped in the modified handlebar riser to bolt the rod end bearing to it. Alternatively, a tubing clamp can be made which clamps to the outside of the steer tube, and has a stub braised to it which the rod end bearing can be mounted to.

The remote steering rod itself can be made from an aluminum tube with an inner diameter that can be tapped out to have the rod end bearing screw into it. A nut should be butted up to the tapped out tube to lock the rod end bearing in place. If the steer tube needs to be length adjustable, concentric tubing can be used with a tubing clamp in the middle. At the end of the tube which uses the larger size of concentric tubing, a short length of the tapped out tubing can be pop riveted in place.



The remote handlebar can be mounted to the steering rider in a couple ways, either by using a second headset, head tube and steer tube stub to mount the remote handlebar, or as in the example below, by braising a 3/8" bolt into the handlebar, and then bolting the handlebars to the steering riser. Bronze bushings can be used to provide smooth and slop free handlebar movement. A lock nut should be used on the steering pivot bolt to ensure that the handlebars remain fastened at the proper tension.



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Parts:

- Rod end bearings are Wicks# MM-4, at $6.95 ea.
- The inner steering tube is 3/8"x.083 T6 Aluminum tubing, which is the right wall thickness to tap for the rod end bearing's bolt.
- The outer tube is 1/2"x.058 T6 Aluminum tubing.
- Handlebar tubing is 7/8"x.035

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