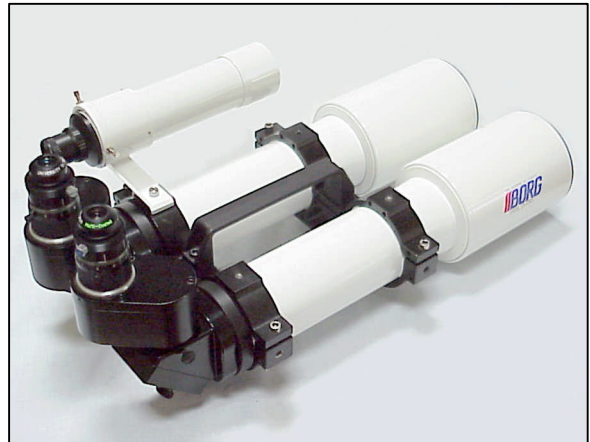


# Borg Binoscope Assembly and Use

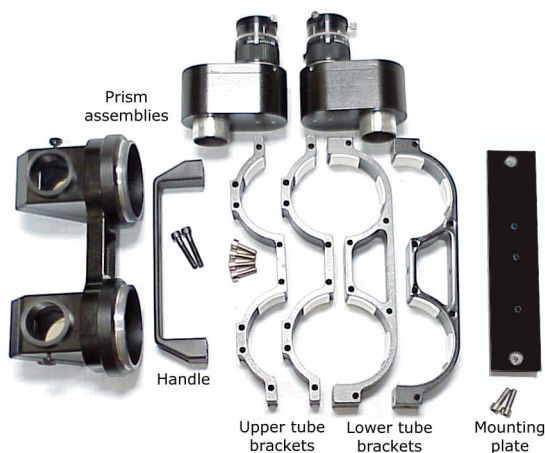
## Introduction

The Borg binoscopes are binoculars constructed from a pair of standard Borg refractors. Any series 80 (50ED, 76Ach, 76ED, 100Ach, or 100ED), 115 (125ED), or 140 (150ED) scopes may be configured as binoculars. Shown at right is the Series 80 Borg 100ED binoscope.

Binoscopes are sold as a complete unit or as an "upgrade" to owners of single Borg scopes. In the latter case, the binoscope is sold complete except for the Borg optical tube assembly (OTA) which you add to complete the binoscope. Eyepieces and finders are separate options.



In any case, the binoscope will be shipped disassembled and should be put together using the procedure below.

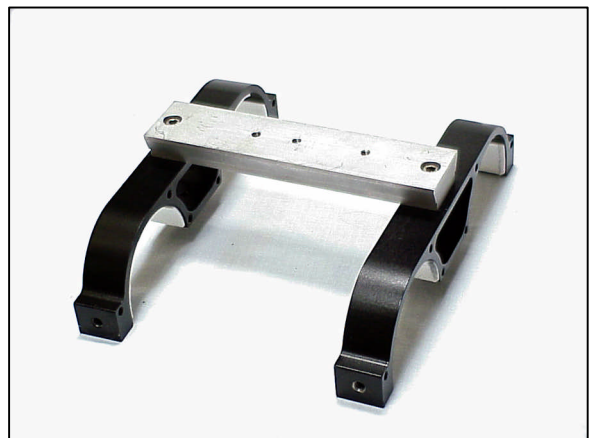


## Assembly Procedure

Before attempting to assemble your binoscope, insure that all parts are present as shown at left. In addition to the binoscope frame pieces shown, the kit should include one Borg OTA in the case of an upgrade kit, or two OTA's in the case of a complete binoscope purchase. Note that this manual is illustrated with the Borg 100ED binoscope, but all other binoscopes include similar parts. All fasteners are metric 6mm hex head screws, so the appropriate metric wrench should be used.

### Step 1. Lower frame assembly.

The first step is to attach the mounting plate to the lower tube brackets to form the base of the binoscope. Do not tighten the mounting plate screws at this time.



**Step 2. Attach tubes to diagonal assembly.**

Next the OTA body tubes should be screwed into the diagonal subassembly. The objective side of the tubes will have a black thread insert. The mirror-assembly side of each tube is opposite this black insert.



**Step 3. Set tubes in base subassembly.**

Set the subassembly from step 2 in the base frame from step 1. Align the frame (with baseplate screws slightly loose) to accommodate the tubes without placing strain on the tubes.



**Step 4. Attach objectives to tubes.**

Attach both objectives to the tube sections (do not overtighten. Note the orientation of the Borg logos on the objective hoods and attach the objectives so that the Borg logos are upright. If necessary, detach the hood retaining ring at either the front or rear rim of the hood and reverse the hood tube end-to-end.



**Step 5. Attach upper tube brackets.**

Attach the upper tube brackets with the provided screws. Tighten the screws just enough to hold the OTA's in place.



**Step 6. Attach carrying handle.**

Attach the handle between the objective tubes. Once this is done, tighten the handle screws as well as the four edge screws in the top brackets. These should be firmly screwed in to secure the objective tubes but not excessively tight. Felt pads between the tubes and brackets should distribute the gripping force evenly around the tube.

Once the top bracket screws have been tightened, flip the subassembly over and tighten the mounting bracket screws.



**Step 7. Attach eyepiece focusers and mirror assemblies.**

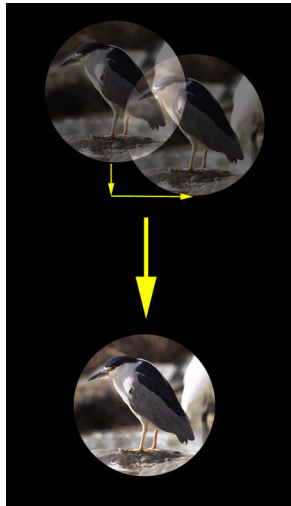
Screw the eyepiece focusers into the mirror assemblies, and slip the resulting subassembly into the binoscope's diagonals with the focusers oriented towards the back of the scope and each other. Tighten the set screws at the top of the diagonals enough to hold the mirror assemblies in place.

Add your eyepieces to the focusers and tighten the retaining screws to complete the assembly procedure.



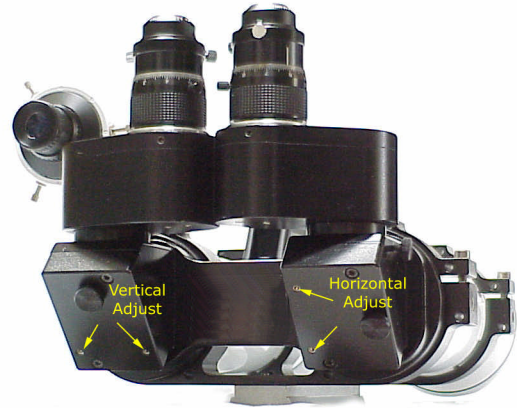
### **Step 8. Adjust collimation.**

The last step is to adjust the collimation. After initial assembly, set the field collimation thumbscrews (located behind the diagonals) in a middle position and select a distant target for viewing (a daylight target is recommended for this step).



Use a screw driver to turn the small pair of screws also found on each diagonal near the thumb screws until the individual eye views are close to overlapping (this is just a rough adjustment).

When adjusting using these screws, screw one out and screw the other in an equal amount. In doing this adjustment, you may find it convenient to alternate looking through your left eye alone and your right eye alone.



Final, fine adjustment to the collimation can be done now using the thumbscrews. High power eyepieces are often helpful for final collimation adjustment.

## Using the Binoscope

To use the binoscope in the field, first focus each of the eyepieces individually on the target using the left eye for the left eyepiece and the right eye for the right eyepiece. If the focus travel for your eyepiece set is not adequate, you may need to pull the eyepieces out slightly and lock them in place to achieve rough focus, or in extreme cases, you may need eyepiece extension tubes. In either case, when adjusting the rough focus in this manner, first set the helical focusers to their middle positions to allow for maximum adjustment travel later.

Next adjust the interocular distance (distance between your eyes) by rotating the mirror assemblies at the point of attachment to the diagonals of each scope. Rotate them until they are turned an equal amount for each side to achieve the interocular distance that suits you.

Finally, using a distant target, adjust the collimation between the left and right eyepiece views so that the views fully overlap as pictured in step 8 of the binoscope assembly instructions above. For field use, the adjustments are made by turning the thumb screws located at the back of the diagonals. The right screw adjusts the horizontal collimation, and the left screw adjusts the vertical collimation. Using a pair of high power eyepieces can aid in achieving precise collimation.

If you find that there is insufficient travel using the thumb screws alone (not a normal situation), set the thumb screws to a mid-position and follow the procedure described in step 8 to achieve rough collimation first, and then use the thumbscrews for final adjustment.

