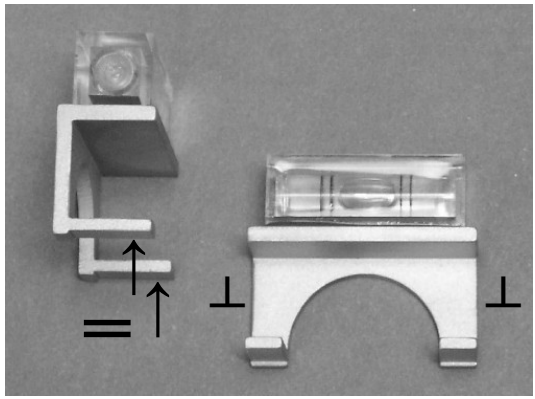
Precision Sighting Level
Scope Mounted

Mounting Instructions

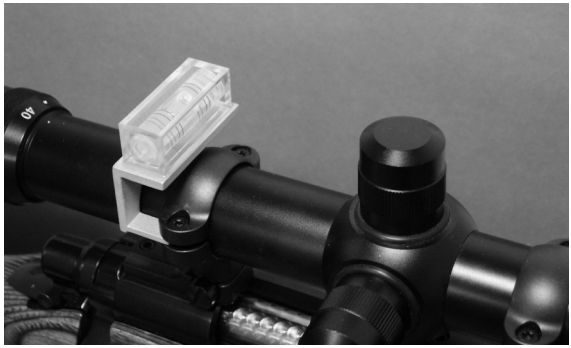
Your objective is to have the sighting level clamped onto the main tube of the scope such that the bubble is exactly centered between the two lines when the scope center line is directly above the rifle bore (i.e. exactly on the vertical plane through the rifle bore center line). For the best accuracy and consistency, before the level is clamped permanently to the scope, the scope should be positioned with its horizontal crosshair exactly horizontal to the earth.

The alignment/level fixture is designed to work with horizontally split scope mounting rings such as Leupold's. Other types of mounts may be more difficult depending on which surface you find and trust to be truly horizontal or perpendicular to the rifle bore and scope center lines plane.

Note: The alignment/level fixture was assembled with the surface of the step (marked = in this photo) resting on a precise level surface plate. Therefore this surface is the one to have resting on any reference being checked. Either end of the fixture (marked ⊥ in the photo) can also be used as they are precisely perpendicular to the spirit level. (Do not use any other surface than those mentioned as they have not been calibrated to be level.)



The alignment/level fixture can be positioned at either scope mounting ring. Loosen the screws holding the top half of your ring of choice until the two legs (parallel surface) of the fixture can slip in and rest on the horizontal surface of the lower half as shown below.

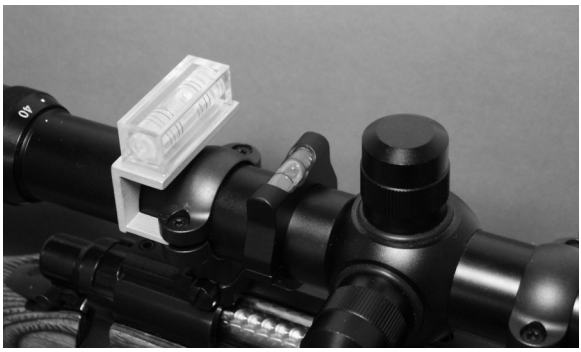


Tighten the screws back down only enough to have the top half of the ring keep the fixture in place.

Once the fixture has been mounted in place as described, it would be best to make sure that the scope is mounted correctly with its crosshairs exactly horizontal/perpendicular. Find a way to hold the rifle steady with the fixture bubble exactly centered and the scope view containing a horizontal reference line that you have placed on a window or wall using tape and a carpenter's level. If the scope horizontal crosshair does not lie parallel to this reference line, loosen the free scope mounting ring, then rotate the scope until it does and secure it again with this free mounting ring.

With the scope now accurately oriented in its mount and the rifle still held with the fixture bubble exactly centered, mount the sighting level anywhere along the main tube that will leave it convenient for you to use during shooting. If the fixture bubble and the sighting level bubble are both now perfectly centered, secure the sighting level by tightening its two screws carefully a little at a time. Watch that the sighting level is not rotated as each screw is tightened by making sure its bubble remains centered along with the fixture bubble.

Be kind to your scope and do not over tighten these sighting level screws. You only need it secure enough to not rotate during any handling or shooting.



You are now done with the alignment/level fixture so remove it and retighten the scope ring screws. Please put the level fixture in a safe place for future use and go have fun shooting accurately!

Notes on how **centered** should the bubble be?

To make comparison calculations easier we will use a vertical distance (bullet drop) of 100 inches. That way it will be a simple matter to divide whatever bullet drop in inches you are interested in by 100, and then multiply this result by the error values given below.

Alignment/level fixture

For this spirit level, the error in vertical angle when the bubble edge is allowed to just touch one of the first lines instead of being perfectly centered is 8 MOA (MOA = minute of angle = 1/60 of a degree). With a vertical distance of 100 inches, this 8 MOA would result in a horizontal error of 0.23 inches. Take your time during the mounting procedure to eliminate this possible error.

Scope mounted level

For this spirit level, the vertical angle error when a bubble edge is directly under one of the lines instead of perfectly centered is 4 MOA. In 100 inches, 4 MOA equals a 0.12 inch horizontal error. When a bubble edge is 1/32 of an inch outside one of the lines, the vertical angle error is approximately 27 MOA. In 100 inches, 27 MOA equals a 0.79 inch error.

Thus the scope mounted level is very sensitive. Remember that a vertical angle error of 2˚, easy to have when not using a level, produces a horizontal error of 3.5 inches for each 100 inches of drop.

Lyon Design & Production, Inc.
P.O. Box 3, Days Creek, OR 97429
(541) 825-3392
*email:*info@lyon-inc.com
www.lyon-inc.com