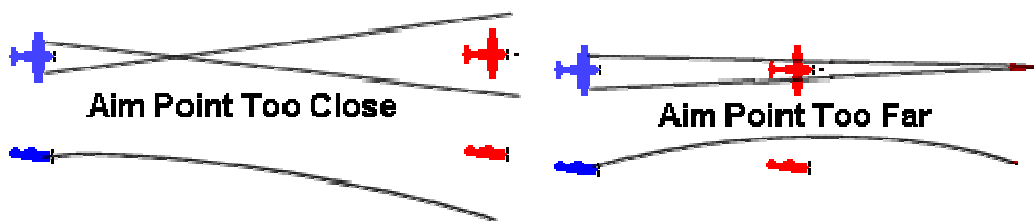# Setting Convergence
by Hammer

Aces High allows you to set the convergence of the guns on the planes you fly. Setting convergence adjusts the trajectory of your guns so the bullet streams come together at the aiming point at the desired range. Before discussing how to set your convergence, you need to understand what happens to your bullets when they are fired, how setting convergence compensates for this, and some things you should consider when setting your convergence.

As soon as a projectile leaves the end of a weapon's barrel, it begins to fall. They all fall at the same rate regardless of which weapon they were fired from. A projectile fired from a level barreled Hispano cannon will hit the ground at exactly the same time as a rock dropped from the same level (assuming flat ground!) (actually, many projectiles tend to rise when they first leave the barrel of a weapon because of the spin put on them. this is not important for this discussion). The only variable between weapons is how far the round will travel in that amount of time. This is determined by numerous factors but mainly by muzzle velocity and the drag of the round, which causes it to slow. The sum of all these factors is known as the weapons ballistic characteristics, or ballistics for short. This is important because you must compensate for the ballistics in order to hit your target at various ranges.

In Aces High, each weapon's ballistic characteristics are modeled. These run the gamut from the laser-like 20mm Hispano cannon to the anemic Japanese Ho-5. In order to make maximum use of your plane's weapons, you must understand how they perform and make adjustments accordingly.

Setting your gun's convergence to range X adjusts two important angles on the guns. It adjusts a horizontal angle so the bullets will cross at range X and adjusts the vertical angle (range) so the bullet will be at the same level as the aim point at range X. This is important because, depending on the ballistics of the weapon you are using, shooting at targets significantly closer or farther away than your convergence setting could be missed because of the compensations made. See the examples below.

While these examples are extreme, they illustrate the things you should consider when setting your convergence and aiming your weapons at ranges other than your convergence range. All shots at less than convergence range will strike higher than the aim point while all shots at more than the convergence range will strike lower than the aim point. If you are in a plane with guns mounted outside on the wings, shots at any more than twice the convergence range have little chance of hitting.

Setting Your Convergence

The mechanics of setting your convergence in Aces High are very easy. It is done from the hangar by clicking on the "Set Convergence" button. This changes your point-of-view to the rear of the plane looking forward. Once this is done, you will want to once again put your clipboard away by clicking on the <ESC> key. This will give you the view shown here:
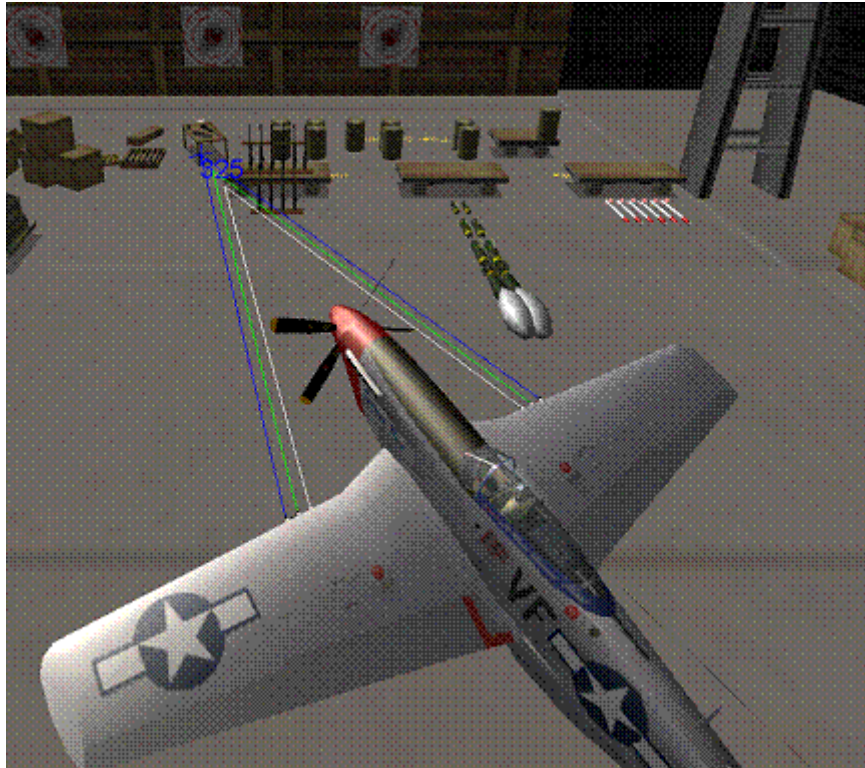
Colored lines extend from each gun and converge at some distance in front of the plane. To change the distance where the weapons converge, move your cursor over the convergence point until the cross-hairs and distance appear in the same color as the lines from the guns you wish to adjust. Once this happens, click on the cross-hair and drag it out or in to the distance you want. Different sets of weapons may be set to different convergence distances. While you will want to experiment and find a range that is comfortable for you, your flying style, and your gunnery skills, a decent range to start out is 300 - 350. You will still want to experiment and adjust for your style of flying.

There are a couple of theories on how you should set your convergence. Probably the most common is to set all of your guns at the range which you feel you take most of your shots. Another, used primarily on the 6 or 8 x .50 cal U.S. planes, says to set your pairs at various ranges to give you the biggest spread of bullets and therefore a larger probability of getting some hits. You will have to decide what works best for you.