

# Cockpit Instruments

This picture shows the different instruments in the cockpit. Each plane will have a different layout, and some of the instruments will be different. Use this as a general guide to learn the different instruments.

In addition to the regular instruments, there is a Heads Up Display in the upper right corner of the screen. A real WWII airplane did not have the HUD, but it is included in game because some instruments are harder to read in game then they would be in real life.



1. Airspeed Indicator - White line shows your indicated airspeed, red marker shows your true airspeed. Indicator reads in MPH.
2. Compass
3. Ordnance Display - Selected ordnance and count
4. Gunsight

5. Slip Indicator - Ball indicator shows slip/skid
6. Flap Position Indicator
7. Propellor RPM Indicator
8. Oil Pressure
9. Manifold Pressure Gauge
10. Fuel Tank Quantity and Fuel Tank Selection - Shows quantity of tanks and which tank is currently selected. You can run in auto mode which will select tanks for CG balance.
11. Surface Trim Indicators - Shows position of rudder, elevator and aileron trim tabs
12. Accelerometer - Number of G's aircraft is pulling
13. Beacon - Shows your connection status to the host
  - o Grayed out - Nothing wrong
  - o Green - Slight variance
  - o Yellow - Problem exists
  - o Red - Your connection is being lost
14. Landing Gear Indicator - Green indicates gear down, grayed out indicates gear retracted, yellow indicates gear in transit.
15. Clock - Shows current server time if online, adjusted time if set offline
16. Auto-pilot Indicator
17. Clipboard - Used for maps, roster, and mission planning
18. Combat Trim Indicator
19. Altimeter - Shows your current altitude in feet
20. Turn and Bank Indicator
21. Compass
22. Vertical Speed Indicator - Climb/descent speed in thousands of feet per minute
23. Artificial Horizon
24. Engine Temperature

Two instruments that need a little more explanation are the altimeter, and the airspeed indicator. Both of these are available in the Heads Up Display in the upper right corner of your screen.

The altimeter shows your altitude above sea level. There are three pointers, the big hand (like a clock), the little hand, and the red outer pointer. The big hand shows hundreds of feet. The little hand shows thousands of feet. And the red outer pointer shows tens of thousands of feet. You need to be able to read this at a glance. (Note: The red pointer can be hard to see on some displays)

So this altimeter is showing an altitude of 2,500 feet.



2000 feet

500 feet

This altimeter is showing an altitude of just over 12,600 feet.



10,000 feet (the red pointer)

2000 feet

600 feet

Now the airspeed indicator is a little more interesting. In airplanes, we have three speeds to measure: The indicated airspeed, the true airspeed, and the ground speed. In real airplanes, there are actually a few more, but in Aces High, we only have to deal with these three.

In a car, the speedometer tells you how fast you are traveling over the ground, based on how fast the tires are turning. In an airplane, the airspeed indicator tells you how fast you are traveling through the air. On an airplane there is a small tube called a pitot tube (pronounced pē-tow). The airspeed is measured by the force of the air pushing into the pitot tube as the plane is flying.

This gets a little more complicated because at higher altitudes, the air is thinner, which throws the measurements off. So the airspeed indicator shows the "indicated airspeed", and the pilot has to make a correction to calculate the "true airspeed", or how fast the plane is really traveling through the air.



So in this picture, the indicated airspeed is 200 miles per hour. The little red pointer is showing that our true airspeed is about 240 miles per hour. (Again, the red pointer is hard to see on some displays) Real WWII airplanes didn't have the little red pointer. The pilot had to make the calculation himself.

The ground speed is a measure of how fast I am traveling over the ground, and is calculated based on the true airspeed, and the speed and direction of the wind. So if the wind is blowing from the west at 20 mph, and I am flying west at 200 mpg TAS (True AirSpeed), then my ground speed is 180 mph. If I turn around and fly east, my ground speed would be 220 mph.

To calculate all these things, a pilot uses an instrument called an E6B.

# The E6B

Pilots in real airplanes use a device called an E6B. This is used to calculate, among other things, your speed and how much fuel you have left, and how far you can fly with that fuel.



Mechanical E6B



Electronic E6B

In Aces High, there is an E6B function located in the clipboard. While in flight, press (esc) to bring up the clipboard, and then click E6B.

Speed		Wind	
Indicated	65	Direction	180
True	65	Speed	0
Ground	65	Left Cross	-0
Mach	0.09	Tail	0
Weight	17077		
Climb	1		
Fuel Remaining	306	Emergency Power	3000 RPM 60" MP
GPH	668	Military Power	3000 RPM 54" MP
Time Remaining	27 Mins	Normal Power	2600 RPM 44" MP
Range	30	Max Cruise	2300 RPM 35" MP
Burn Mult	2.00		

Aces High E6B

The E6B will show your Indicated Air Speed, True Air Speed, and Ground Speed.

The E6B will also tell you how much fuel you have left, how much you are currently using, and how far you can fly at your current throttle setting. Use the E6B instead of the fuel gauge on your instrument panel to tell how much fuel you have left. Most planes have more than one fuel tank, and the fuel gauge on the instrument panel is only showing one tank at a time. In Aces High, the system will automatically cycle through the different fuel tanks to keep the plane balanced. In real life, you would have to do this manually, and it would be different for different planes. When you learn a little more, you can choose to do this manually if you wish. For now, just use the E6B instead of your fuel gauge. Using the chart on the right of the E6B, you can tell how to adjust your throttle to get more range.

On the E6B, when you are in the Melee Arena, you will notice something that says “Burn Mult; 2.00”. This means that your plane will burn fuel twice as fast in game as it would in real life. This is to scale down the range of the planes, and make fuel a factor in your flights. In real life, many of these planes could stay in the air for several hours. By doubling the rate your plane uses fuel in the game, you actually have to think about how much fuel you have left, and how far you can fly until you refuel.