



# CG-4A

**COCKPIT GUIDE &  
FLIGHT MANUAL**

Microsoft **Flight**  
**Simulator**

10A

OBP10A



## GET TO KNOW THE CG-4A

...between 110 and 130 mph.

The CG-4A took its maiden flight in May of 1942 and was introduced into combat service in July of 1943. The CG-4A (CG stands for “Cargo Glider” although it was also referred to as “Combat Glider”) played critical roles in several battles. It was notably used at the opening of Operation Overlord, the 1944 Allied invasion of Normandy, France.

Nearly 14,000 CG-4A gliders were manufactured by over a dozen companies during the Second World War, including by the Ford Motor Company, the Waco Aircraft Company, and the Cessna Aircraft Company. General Hap Arnold, the commander of the United States Army Air Forces, established a fresh command dedicated to creating and operating combat gliders in February of 1941.

Industry participants submitted several designs, with the Waco CG-4A standing above all others in capability. The high-wing monoplane design comprised a welded steel fuselage frame covered in canvas. Its wings, tail, and control surfaces were built of wood frames covered in fabric and the glider’s floor was built of honeycombed plywood that could withstand harsh loads and rigorous landings. During its operational tenure, the CG-4A was towed primarily by the C-47 Skytrain. It had a maximum speed of 150 miles per hour, but it typically “cruised” (towed behind the tug

Its nose, which held the cockpit, could swing upward for quick loading and unloading of the main cargo area. Crewed by two, it could carry up to 15 passengers with combat loads, although it typically carried a maximum of 13. It could also carry: a 75mm howitzer, 25 rounds of ammunition, and two artillerymen; a jeep with driver and an assortment of personnel and cargo; a small bulldozer with operator; and several other loads and combinations.

During the war, CG-4A gliders were towed with a 350-foot-long rope. After the glider pilots released the line, they needed to keep the aircraft above its stall speed of 49 miles per hour as they navigated toward their targets. It could land in just 200 yards, granted it touched down at its ideal landing speed of 60 miles per hour. Landings often proved rough, with U.S. Army General William Westmoreland noting that World War II combat gliders were the “only aircraft built to crash.” Once on the ground, the two pilots helped unload the glider’s personnel and contents and then grabbed their weapons and joined the troops they carried into combat.



## THE CG-4A COCKPIT

The WACO CG-4A has a very basic cockpit. Constructed from a series of metal tubes, all flight controls simply hang off the structure. Seating for the pilots is steel tubing and plywood with cushions tied to the assemblies.

Glider missions were not long and it was not intended that crew would be in the cockpit for more than a few hours, if that.



A chronometer is mounted directly in front of the pilot on the left vertical cockpit strut. Glider missions were extremely time-critical.

## INSTRUMENT PANEL

The panel contains all the flight instruments and switches the CG-4A pilot needs.

From the left side, these are:

- A. Navigation Light switches**
- B. Landing light switches**
- C. Turn/Slip indicator**
- D. Vertical Speed Indicator**
- E. Airspeed Indicator**
- F. Altimeter**
- G. Compass**
- H. Recognition Lights switches**



# FLIGHT CONTROLS

The CG-4A has primary flight controls for pilot and co-pilot. Sometimes the glider was flown only from the pilot seat with the co-pilot's position occupied by a trooper.



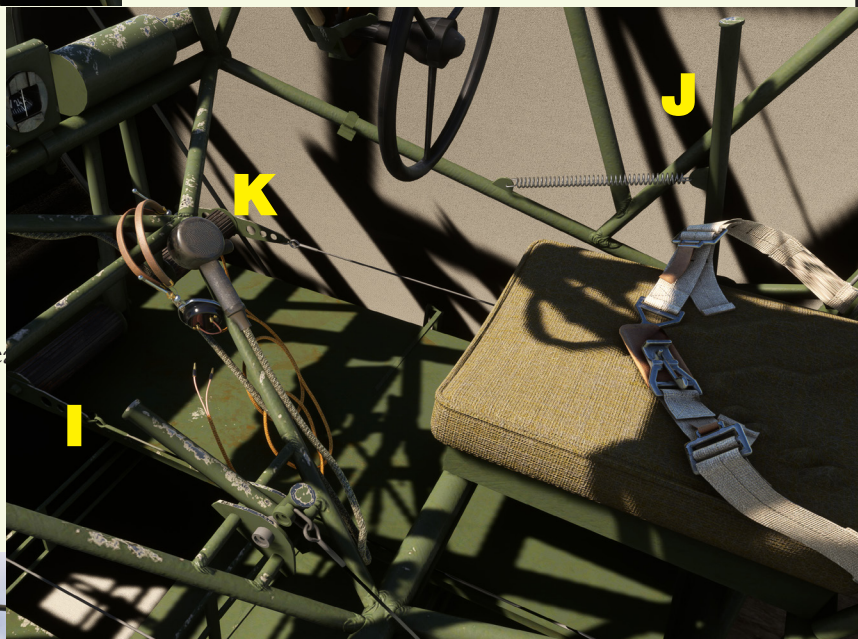
The CG-4A has a pair of large “speed-brakes” mounted on the top of each wing. These are employed to slow the glider before landing and to control its descent. They are operated using the large vertical lever (J) (one each side).

A large steering wheel controls the lateral movement of the glider and when pushed forward or back, controls the pitch.

Conventional rudder pedals are used to control the large rudder, necessary to keep the glider on track, especially under tow.

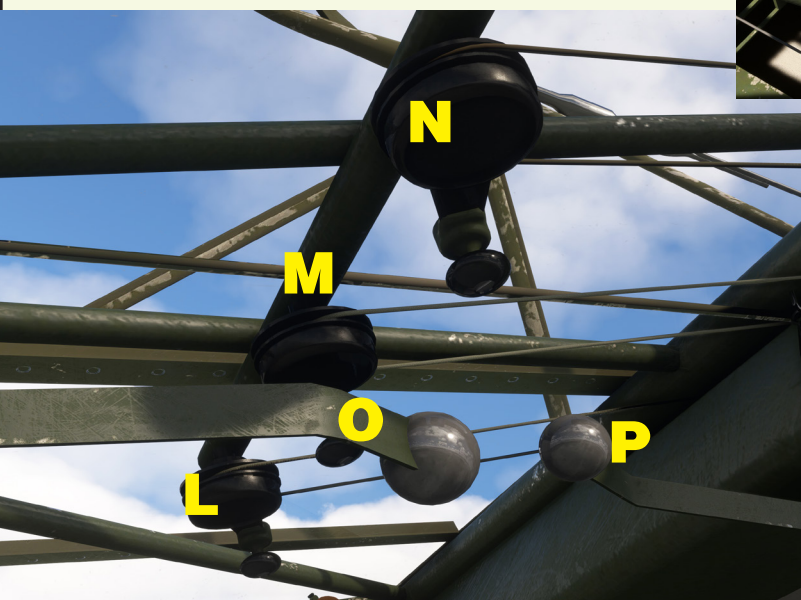
Between the seats, mounted on the floor frame is a short lever (I) which unlocks the forward cockpit section and allows it to lift up, revealing the front end of the cargo compartment.

The pilot communicates with the tow-plane via a basic headset intercom system (K).



Above the pilot on the roof frame are mounted the controls for Aileron Trim (L) Rudder Trim (M) and Elevator/Pitch Trim (N)

The large lever (O) when pulled down, releases the tow-cable. The smaller lever directly aft of this (P) when pulled down, releases the gear cradle, dropping the landing gear after takeoff.



# FLYING THE CG-4A

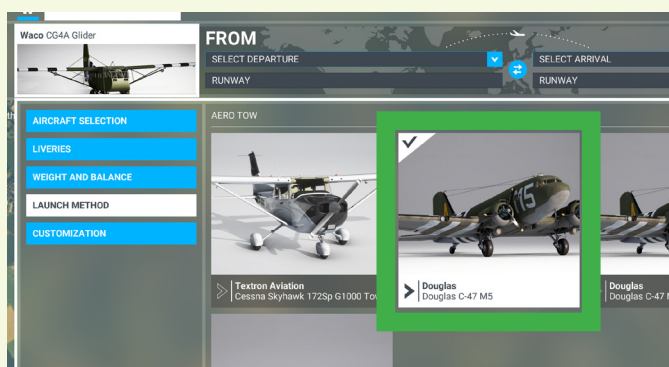
This livery is available separately.



The CG-4A is towed into the air by a C-47 Skytrain or other transport aircraft like the Curtiss C-46. The gliding performance of the Waco cannot be compared to modern gliders. It is heavy and cumbersome and can fall out of the sky very quickly unless piloted with care to stay above its stall speed.

So in a mission scenario, the CG-4A is towed all the way to the target landing area before being released. It is then piloted down to the landing area.

## SETTING UP



You first need to ensure that you have the C-47 package installed in your simulator. So that when you select the CG-4A as your aircraft and then choose your glider launch method, you can select the C-47 from the options for tow aircraft. **DO NOT** select any other aircraft you have in there unless it is the C-47 or other large transport plane. A Cessna 172, for example, will never get it off the ground!

Now, choose your airfield for departure and go there.

When loaded, you will be sat in the pilot seat of your CG-4A. Directly ahead of you, you will see the C-47 tow-plane with the tow-rope stretching back to the link jaws above your head.

## TAKEOFF

To start your flight, waggle the rudder to signal the pilot of the C-47 that you are ready to go. A few seconds later you will hear the C-47 power begin to rise and you will begin to move off, slowly at first but rising quickly as the C-47 accelerates.

As you accelerate use small rudder inputs (**DO NOT OVER-CONTROL!**) to keep straight behind the C-47. As the tail of the C-47 rises off the ground, pull back on the control wheel, gently, and lift the CG-4A into the air.

Now, the next part is **IMPORTANT!**

Keep your glider **ABOVE** the level of the C-47. No more than about 20 degrees on the tow-line. Do not over-control and try and climb too fast, you will make it difficult for the C-47 pilot to maintain climb speed and could snap the tow-line. Maintaining your position relative to the C-47, slowly climb at the same rate. This will get easier as you accelerate.

As you enter your climb pull on the gear-release lever (**P**) and drop your gear. Make every attempt to execute gentle controlled movements while still attached to the C-47. If you see the tow-plane commence a turn, turn with it at the same angle and rate. Try not to over-control the rudder otherwise you will begin to oscillate behind the tow-plane which could ultimately lead to snapping the tow-line.

# FLYING THE CG-4A



Here the gear is dropped but we are still in a controlled tow-climb

**PLEASE NOTE** At the time of writing, the current flight patterns for gliders do not permit long-distance flights. The tow-planes will tow your selected glider to 3,000 ft and on a reciprocal course to the original takeoff strip, before releasing. Unfortunately this prevents the CG-4A from completing any historical re-enactments.

## RELEASE

You can choose to release the tow-line when you wish or wait until the tow-plane signals you to release. The tow-pilot will do this by wagging his wings.

To release your CG-4A from the tow, pull down on the large overhead lever (O) and the tow-line will drop away and the C-47 will fly on without you.

On release, do not be tempted to raise the nose in a climb. The CG-4A stalls very easily at 49 mph. Keep the nose down slightly to gain good flying speed of around 120 knots. You will descend slowly, as the Waco is heavy and is not designed to glide very long distances.

Pick your landing spot and create a mental landing pattern. Descend SLOWLY to avoid losing airspeed. Airspeed is very easy to lose but very hard to get back! If the glider shows signs of stalling, immediately push the controls forward and enter a short dive, if you still have the height, to regain flying speed. As you approach your designated landing area use the speedbrakes (J) VERY CAREFULLY! to reduce your speed to around 75 mph. The speedbrakes are only up for a second or two - they are very effective!

If the tow-plane turns, turn with him, keeping the correct position.



## LANDING

Landing should be executed in a long flat glide, losing height gradually until you reach a speed of around 65 mph. Allow the CG-4A to sink until the skids touch ground. At this point it will be difficult to steer but not impossible. At any rate, the glider will come to a halt very quickly.





Now you are on your own!

## DISEMBARKING

Once your glider comes to a complete stop, pull up the short lever (I) to open the front section. Outside you will see a jeep (with what looks like engine problems!) and your troopers will have disembarked.



We hope you enjoy the challenges of operating the CG-4A combat glider. Once mastered it is a great source of satisfaction and achievement!

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