

A Quick Look at IL2 Aircraft Performance



By **Jay Hall**

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Introduction

Invariably, one of the first things that you will notice if you run across an online forum dedicated to simulation flying is a debate about which aircraft in a particular game is the best or which is superior under a given set of circumstances. And it is no different for IL2 Sturmovik, as you will endlessly, and I do mean endlessly, see simmers of all levels of experience debating the pros and cons of each and every airframe down to minutiae so small that not even the original engineers who designed the airframes in the 1930s and 1940s would have noticed.

And so, rather than sit around and endlessly debate the matter, why not run some simple repeatable tests? Especially some real world gaming tests that would be applicable to situations that newbies are likely to be flying under in their first weeks online with Hyperlobby.

Please just remember that in what follows, we are only concerned with how the plane models fly in IL2 and I am not making any commentary about how these respective planes performed in the real world or which was faster/better, etc..... I do know for example that the F4U-D Corsair could sustain a dive of up to 880 kph without major damage in real life, but in IL2, damage begins to occur to the frame at about ~780 kph, so I suspect that IL2 has hit some airframes right on the button and struck out in other aspects.

Testing Is All It Takes – Okay so how do the various aircraft perform in IL2 ? Well, as I just mentioned we need a fairly repeatable test. In this case, I went within the game to the Quick Mission Builder (QMB) and set the location to the Okinawa map with no AAA. I would then choose the aircraft under consideration (see below) starting at an altitude of 1000m on a heading of 355 degrees and hit fly. As soon as I began flying I would toggle war emergency power (WEP) if available for that specific airframe and then immediately begin a steep dive on a heading of 360 degrees. I then pulled out of the dive 50 meters above the ocean and head on a course of 360 degrees for about 5 km (the 'sea leg') until I reached the closest airfield on that map (which was directly ahead). As soon as I would just pass the tower in the center of that airfield, I would immediately and steeply climb until my nose was pointed directly at the center of the sun and then climb until I stalled out and flipped to the side. I then repeated this for trial for every airframe below five times following the same course in each run.

For the dive results, I followed the same procedure but set the starting altitude at 5000 meters and as soon as I hit fly, I would point the nose over and immediately begin a steep dive until my nose was pointing directly at the reflection disk of the sun on the water (roughly 75 degree angle). All planes broke apart before hitting the water so there was no need to set a higher starting altitude.

For the turning results I approached the central tower of the airfield at 400 kph (this slightly higher speed (which is not the optimal turn speed for many prop driven airframes) was done to simulate the turning ratio of the first turn after approaching the enemy in a head on pass) at both 50 and 1000 meters of elevation and then completed the full turn while timing it (airspeed was indicated by the speed bar in the lower left hand corner of the screen).

I chose these types of tests with these conditions because this roughly simulates the type of flying that the newbie is most likely to face and perform as he enters Hyperlobby (especially with open cockpit servers). Of course these aircraft have different behavior traits at 4000 meters but I am not writing this excerpt for the veteran P51 expert who is flying on a historical server at 7000 meters.

Here are the results (so far):

La-7 3xB-20 – 585 kph on the sea level (50 m height) run and climbed to 1660m on average. Resonance (flutter) set in at about 730 kph and the wings sheared off at 810 kph. Turning times were

20.3 sec at 1000m and 21.8 sec at 50m of altitude at 400 kph. Very smooth maneuverability and fairly hard to roll or flip. Good but not great visibility in closed cockpit servers. Very easy to induce blackout in and very poor dive stability (and dive limit). An excellent choice for many beginner and intermediate level servers on Hyperlobby and perhaps the single best choice for open cockpit servers.

I-185 M-71 (1942) – 580 kph on the sea leg and climbed to 1620 meters in height with WEP. Flutter began at 730 kph and the wings sheared off at ~810kph. Without WEP, speed was 560 kph on the sea leg and reached 1550m in the climb. Turning times were 21.3 sec at 1000m and 23 sec at 50 m of altitude at 400 kph. Very smooth maneuverability and fairly hard to roll or flip. Possibly the single best cockpit for visibility on closed cockpit servers. Easy to induce blackout (although not as fast as La-7) in and very poor dive stability (and dive limit). My pick for closed cockpit servers that have many encounters below 2000m.

Spitfire Mk IX 25 Lbs – 550 kph on the sea leg and climbed to 1580 m on average. In dives reached 820 kph before stutter began and ~870 kph when the wings sheared off. Turning times of 20 sec at 1000m and 22 sec at 50 m of altitude at 400 kph. On paper this airframe seems to have the best blend of everything but there are concerns. Average visibility in closed cockpit, moderate dive limit, and poor roll rate. Excellent cannons (almost equal to FW 190) and excellent lower speed turning limits help to mitigate these negatives.

Bf-109 G-2 (1942) – 510 kph on the sea leg and climbed to 1220m in the climb. In dives reached 810 kph before stutter began and ~860 kph before the wings sheared off. Turning times were 25 sec at 1000m and 27.2 sec at 50m of altitude at 400 kph. One of the best airframes to use for servers that are confined to the year 1942 or before. The poor cockpit visibility (if used on closed cockpit servers) is mitigated by the excellent handling and lack of unusual blackouts or stalls. Very good choice for open or closed cockpit servers that are confined to the early years of the War (1939 to 1942).

FW 190 D (1945) – 570 kph at sea level and climbed to 1480 m. Incredible dive speed of 860 kph before flutter began and ~960 kph before the wings sheared. Without WEP enabled, 540 kph on the sea leg and 1280 m in the climb. Turn times of 25 sec at 50 m and 23 sec at 1000m at 400 kph. Very poor view in closed cockpit. Good roll and incredible cannons (perhaps the most powerful in the game). Very high dive limit and excellent stability at high speed mitigated by less than optimal turning rates at low speed. Perhaps the best choice for open cockpit servers that have many encounters above 2500 m.

P-51D-5NT Mustang – 560 kph on the sea leg and climbed to 1400 m. In a dive reached 870 kph before stutter took over and 960 kph before the wings sheared off. Turning times were 26 sec at 1000m and 29 sec at 50 m of altitude at 400 kph. Two different airplanes in one frame. Down low it is a poor performer and should be avoided as choice in most lower level Hyperlobby servers. Poor turn rate and sluggish behavior gradually evaporate as you climb higher and higher and performs best above 6000m. Excellent choice for closed cockpit historical servers where the action takes place extremely high.

F4U-D Corsair – 540 kph on the sea leg and reached 1360 m in the climb. Flutter began at 780 kph and the wings sheared off at 830 kph. Turning times were 27 sec at 1000m and 28.7 sec at 50 m of altitude at 400 kph. A true hoss if there ever was one. Great open canopy for closed cockpit servers but extremely poor handling. Flops around and stalls all over at speeds below 300 kph and snap rolls in many high speed aerial combat moves. Very much unsuited for Beginners or Intermediate level players in Hyperlobby. Also the most difficult plane to carrier land, especially on escort carriers where speed must be below 190 kph for success.

A6M5c (1944) – 440 kph on the sea leg and 950 meters in the climb. In dives, reached 710 kph before resonance developed and 790 kph before the wings sheared off. Turning times were 27.8 sec at 1000m and 29.6 sec at 50 m of altitude at 400 kph. Average cockpit visibility and very poor overall speed mean that everyone can break away from you with ease in most cases. Airframe has good maneuverability but weak structural integrity and cannot take battle damage.

More aircraft will be test as time allows, so please be patient.

Complex Engine Management and Its Effects – A common question of every new guy to IL2 is what's up with the CEM stuff. How do you control the radiator, mixture, supercharger, etc.. and more importantly, why would you care? Well, I dont have time myself to run exhaustive tests on every airframe in IL2 but I repeated the Okinawa runs above with an La-7 3xB-20 under different CEM settings and found the following:

La-7 3xB-20 with Radiator fully closed (the prime test case) (and mixture set to 100%, throttle 100%, Prop Pitch at 100%, both Magnetos on and Supercharger set at 1) – 585 kph on the sea leg and climbed to 1660 meters in height

La-7 3xB-20 with Radiator set at 'Open' – 560 kph on the sea leg and 1530 meters in the climb.

La-7 3xB-20 with Radiator set at 4 – 570 kph on the sea leg and 1610m in the climb.

La-7 3xB-20 with Superrich Mixture (120%) - 585 kph on the sea leg and 1700 meters in the climb.

La-7 3xB-20 with 80% Mixture – 570 kph on the sea leg and 1660 meters in the climb.

La-7 with 85% Prop Pitch during the climb – 585 kph sea leg and 1660 meters in the climb. Amazingly prop pitch didnt seem to do a damn thing.

La-7 3xB-20 with 85% Prop Pitch during the dive and climb and back to 100% during the sea leg – 585 kph sea leg and 1660 meters in the climb.

Flaps in a Turn – So do flaps in a turn really matter a great deal. Let us see:

La-7 3xB-20 with Radiator fully closed (the prime test case) (and mixture set to 100%, throttle 100%, Prop Pitch at 100%, both Magnetos on and Supercharger set at 1) – Turn times were 20.3 sec at 1000m and 21.8 sec at 50 m of altitude at 400 kph.

La-7 3xB-20 with flaps set at 'combat' – Turn times were 19.1 sec at 1000m and 21 sec at 50m of altitude at 400 kph when entering the turn. So just like cars, the slower you turn the tighter you can turn.

La-7 3xB-20 with flaps set at 'take off' – Turn times were 17.9 sec at 1000m and 20 sec at 50 m of altitude but please beware of the tremendous speed and potential energy that is being bled off to achieve such a tight turn. Many new guys may think this is the road to go, but flaps should be used sparingly and only for a few seconds.

Variance – In all runs of course I could not do every run exactly the same and take every dive and

each climb at precisely the same second through the run, but I found that I was only about 3% off from test to test. Please try these tests above to confirm for yourself that I am not pulling a trick on you.

Discussion – I was initially inclined to believe that lower prop pitch (especially during dives) along with a constant radiator opening of about 4 (at least for the La-7) was probably the 'best' combination of CEM settings and that mixture and supercharger settings were only needed above 2800 meters. The prop pitch strangely seemed to have almost no effects whatsoever on the La's performance. As the results show, it seems that the radiator should be set to fully open while in cruise and as approaching combat should be closed down again, while the mixture at altitudes below 1500m should be set to super-rich (120%) for best effects and this reinforces what Vulgar has found in his CEM [guide](#).

I may add more details here as time goes by but two things to take note of; one is that some of the information in the Il2 Compare program (found [here](#)) is slightly off at least in actual testing and two, the La-7 really is one of the best possible choices for new guys. Its very poor dive limit and high blackout rate are more than made up for by its excellent and very stable handling at anything below 700 kph. Close seconds (especially when considering the new guy) would have to go to the Spit 25 lbs and I-185 M-71.

Credits

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