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P-47D Thunderbolt

COCKPIT AND FLYING GUIDE

FOR SIMULATOR USE ONLY

P47-D Thunderbolt

The P-47D (or the Jug as it was affectionately known) was one of the heaviest fighters of World War 2 with a fully laden P-47 topping the scales at a portly 8 tonnes. This weight required a very powerful engine. The same engine that powered the F6F Hellcat and the Vought Corsair, the Pratt and Whitney R2800. Coupled with an impressive load out capability and very capable 50 Calibre machine guns the Thunderbolt resulted in a very capable medium range escort fighter and excellent ground attack fighter.

But there was an issue. Visibility. The Razorback whilst strong (some returned safely with very large amounts of the plane damaged.) had an issue with rear visibility. The fix was found by a visit to the RAF. The RAF also had this issue on some of their aircraft and had in fact lent their design for canopies to another famous USAAF aircraft the P51 (also available). In this case the answer lay in the Hawker Typhoon with an all encompassing all round vision "bubble top". And the razorback was retired from production in favour of the Bubbletop

P-47s were operated by several Allied Air Forces during World War II. The RAF for example received 240 razorback P-47Ds, which they designated Thunderbolt Mark I. Since there wasn't a need for a high-altitude fighter in the RAF (the superb supermarine spitfire filling that role admirably) the RAF used their Thunderbolts as ground attack. Rather like the Fairchild Republic A-10 thunderbolt in use today. And yes the A-10 takes its name from its WW2 grandfather - The P47-D "Thunderbolt".

As much as possible we have adhered to the stock naming conventions and stock animations and code.

We thank you for purchasing the P-51D and hope that you enjoy flying the aeroplane as much as we enjoyed making it.





Target for tonight

Dimensions:

Wing span 40 ft 9 in (12.43 m)
Length 36 ft 1 in (11.02 m)
Height 114 ft 8 in (4.472 m)
Wing area 299.99 sq ft (27.870 m²)

Empty weight 13,500 lb (6,123 kg)
Max weight 17,500 lb (7,938 kg)

Performance :

Max speed 426 mph (370 kn)
Service ceiling 42,000 ft (13,000 m)
Max range 1,030 mi (1,660 km)

Powerplant :

1 × Pratt & Whitney R-2800-59 18-cylinder air-cooled radial piston engine, 2,000 hp

Armament :

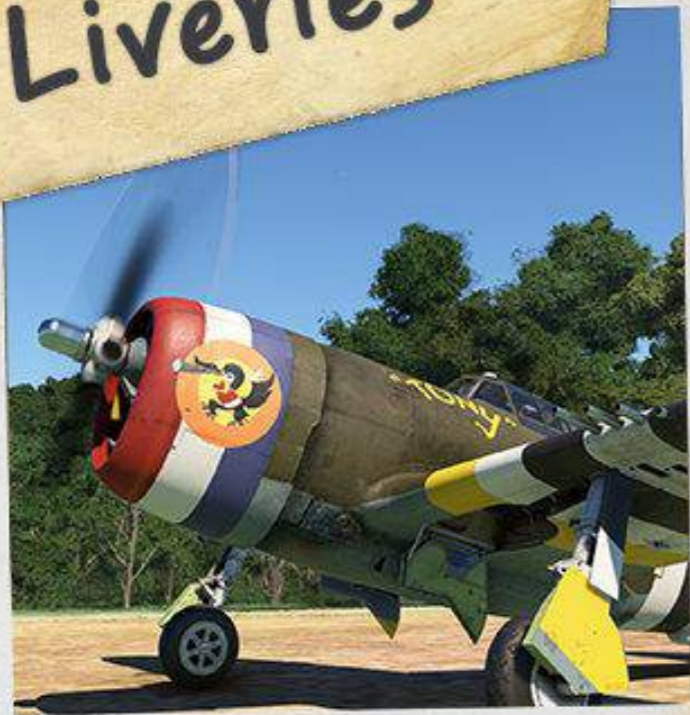
Guns: 8 × .50 in (12.7 mm) M2 Browning machine guns

Bombs: Up to 2,500 lb (1,100 kg) of bombs

FLIGHT MODEL NOTE

Please ensure that you have the flight model set to modern in MSFS. This addon is built for modern flight model

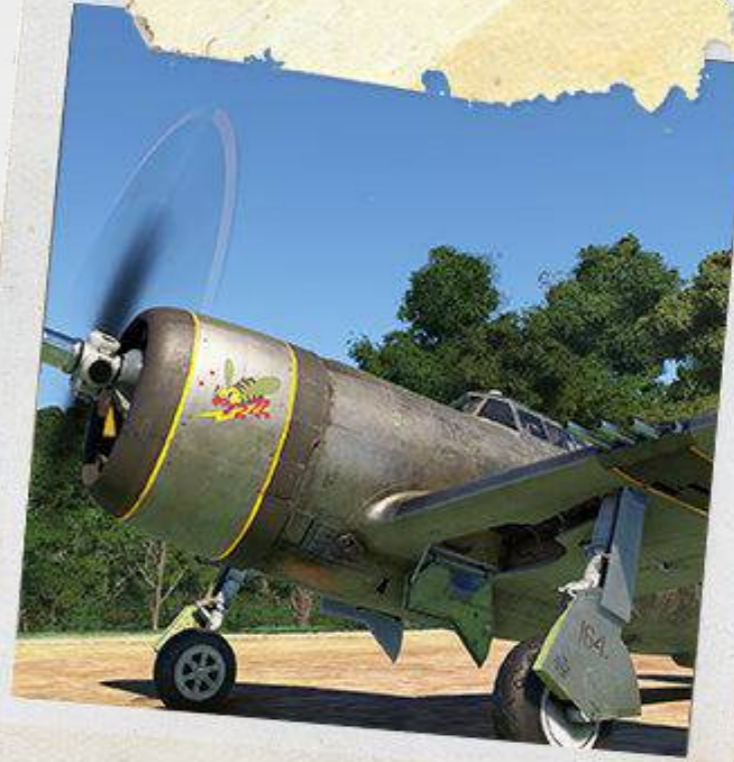
Liveries



5th Emergency Rescue Squadron



405th fighter group 9th Air Force



47th Fighter Squadron, 15th Fighter Group



302nd fighter Squadron
332th Fighter Group



348th Fighter Group



62nd Fighter Squadron
56th Fighter Group

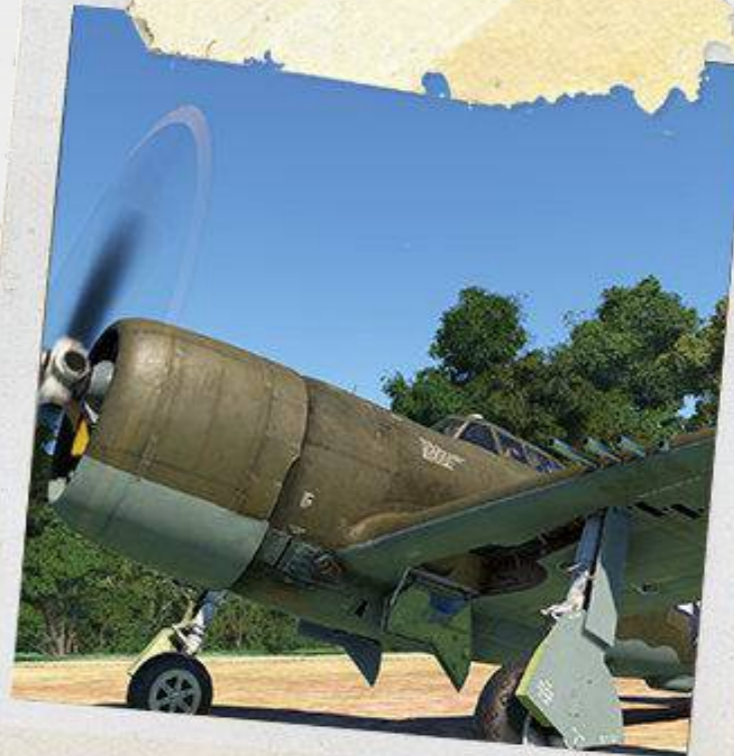
Liveries



42nd Fighter Squadron,
348th Fighter group



Factory fresh bare metal



Factory fresh *painted metal



510th Fighter Squadron,
405th Fighter Group

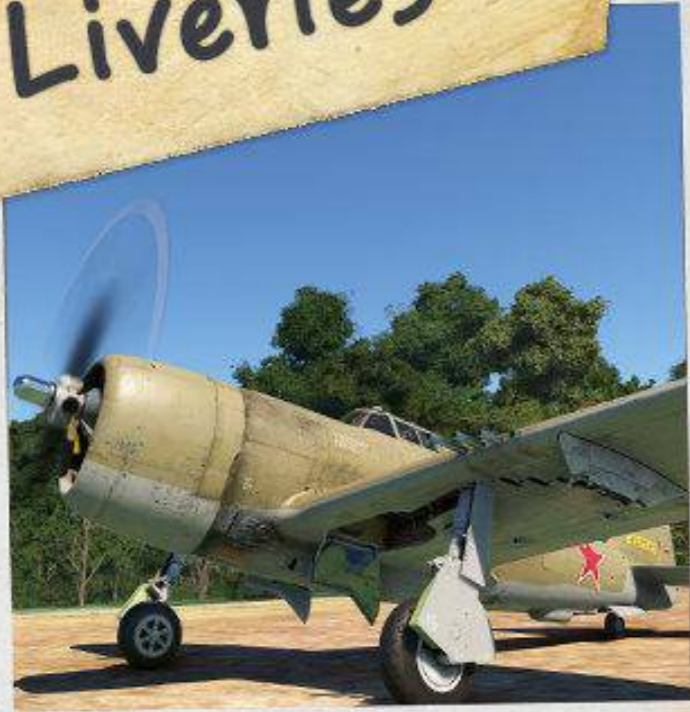


19th Fighter Squadron
318th Fighter group



2/5 Lafayette

Liveries



USSR Lendlease



83rd Fighter Squadron,
78th Fighter Group



COCKPIT

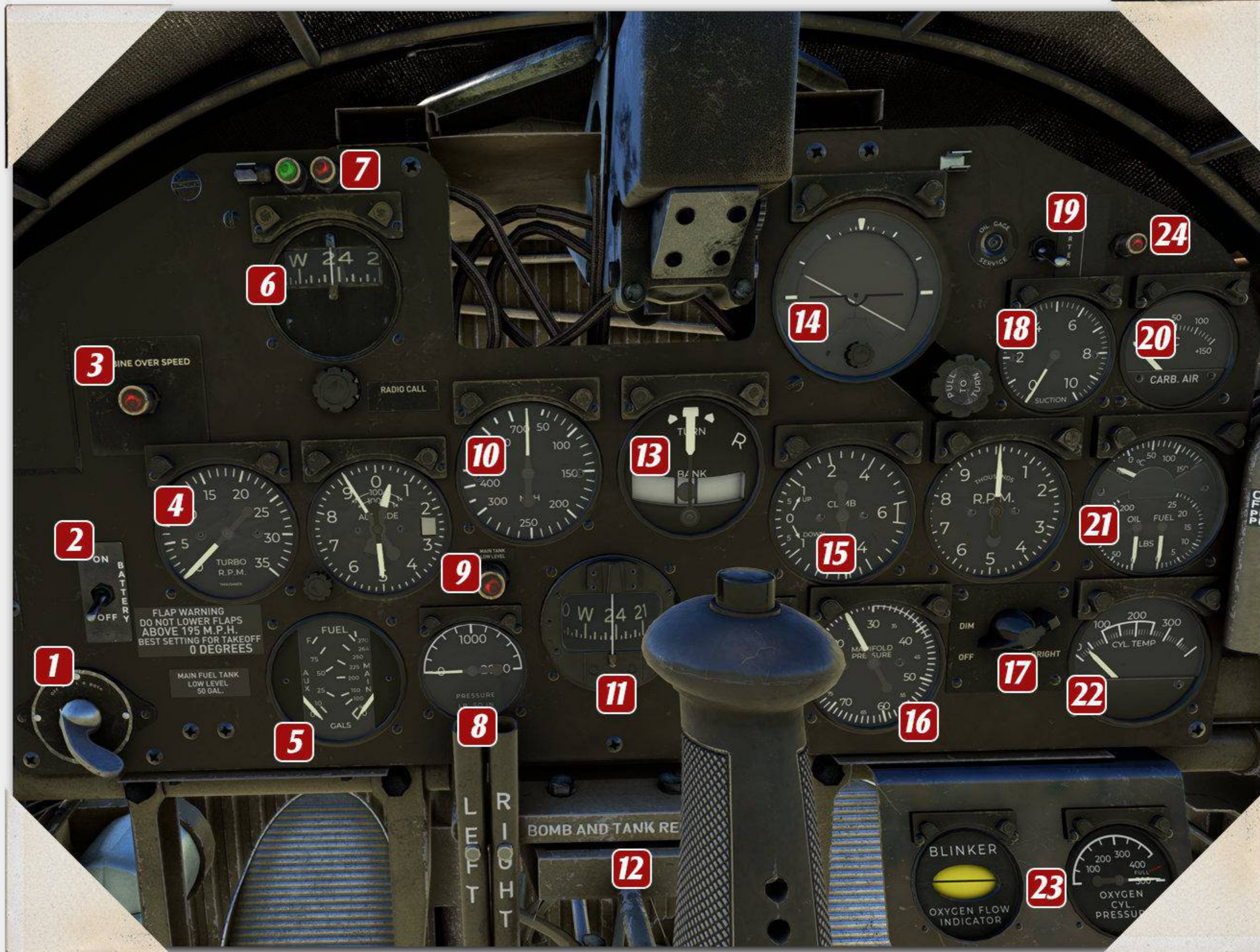
FAMILIARISATION GUIDE

302 Johnson creek

Cockpit - main instruments

Main front panel.

1. Magnetos
2. Battery switch
3. Turbine overspeed (see features)
4. Turbo RPM gauge (see features)
5. Fuel gauge (main tanks only)
6. Directional Gyro compass
7. Gear indicators
8. Hydraulic pressure
9. Low fuel indicator
10. Airspeed gauge
11. Standby compass
12. Parking brake (release levers INOP)
13. Turn and bank gauge
14. AHI gauge
15. Vertical speed gauge
16. Manifold pressure gauge
17. Flood light switch
18. Suction gauge
19. Starter
20. Carb heat
21. Oil /fuel indicators.
22. Cylinder temperature
23. Oxygen gauges
24. Engine removal (see features)



Cockpit - right side

This area can be found immediately to the right as you are sitting in the cockpit.

1. The P-47 is equipped with a draggable canopy . This control will close the canopy fully should you not wish to drag it close.

2. Engine anti ice.

3. Primer (required in some cases depending on weather)

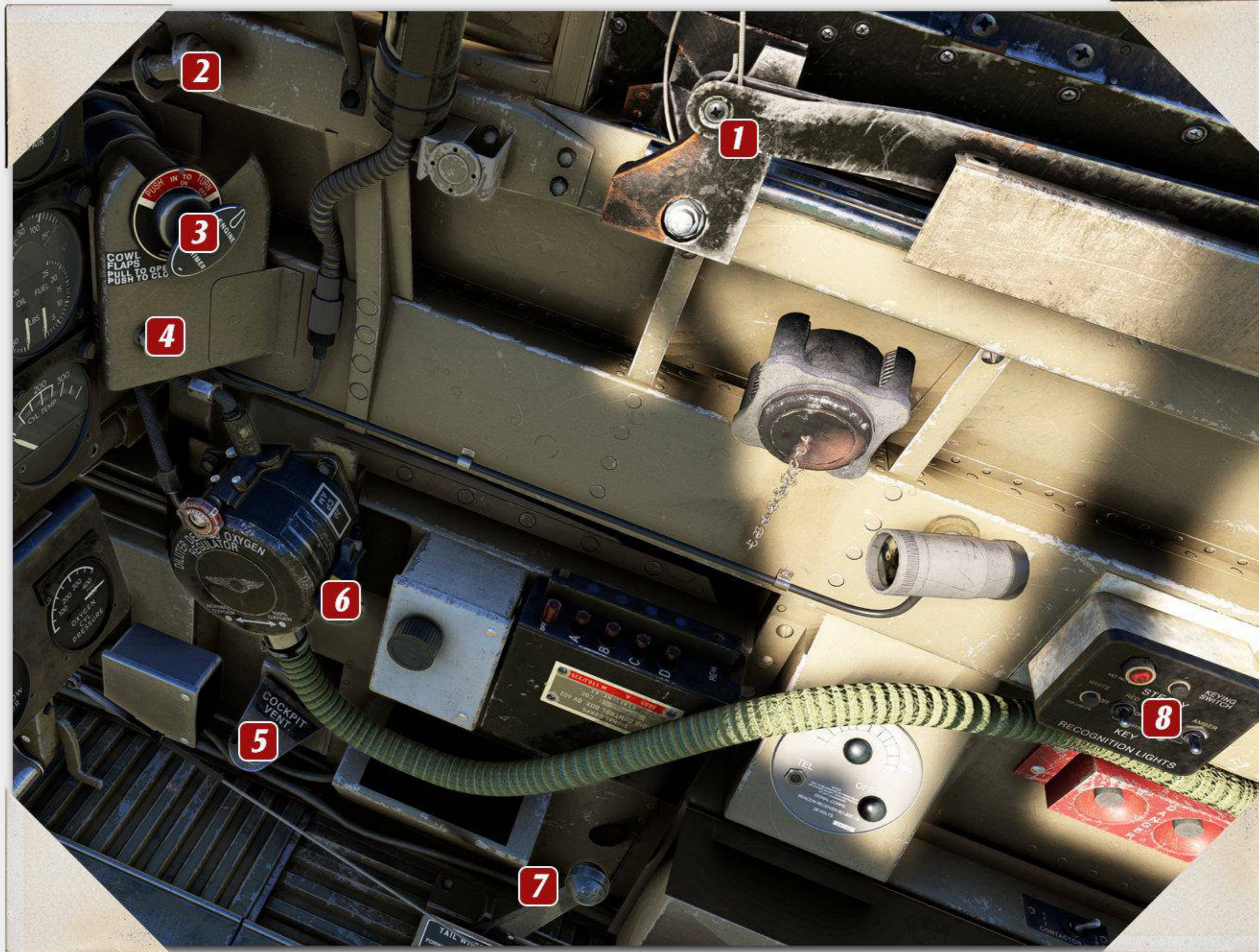
4. Cowl flaps control (temperature dependent however we recommend that they are used)

5. Cockpit venting (opening a window or turning on a desk fan for will simulate the airconditioning available to a real world pilot of the P-47

6. Oxygen Controls. Setting this lever down will set the blinker gauge to blink.

7. Tailwheel lock. Very useful on a taildragger like the P-47

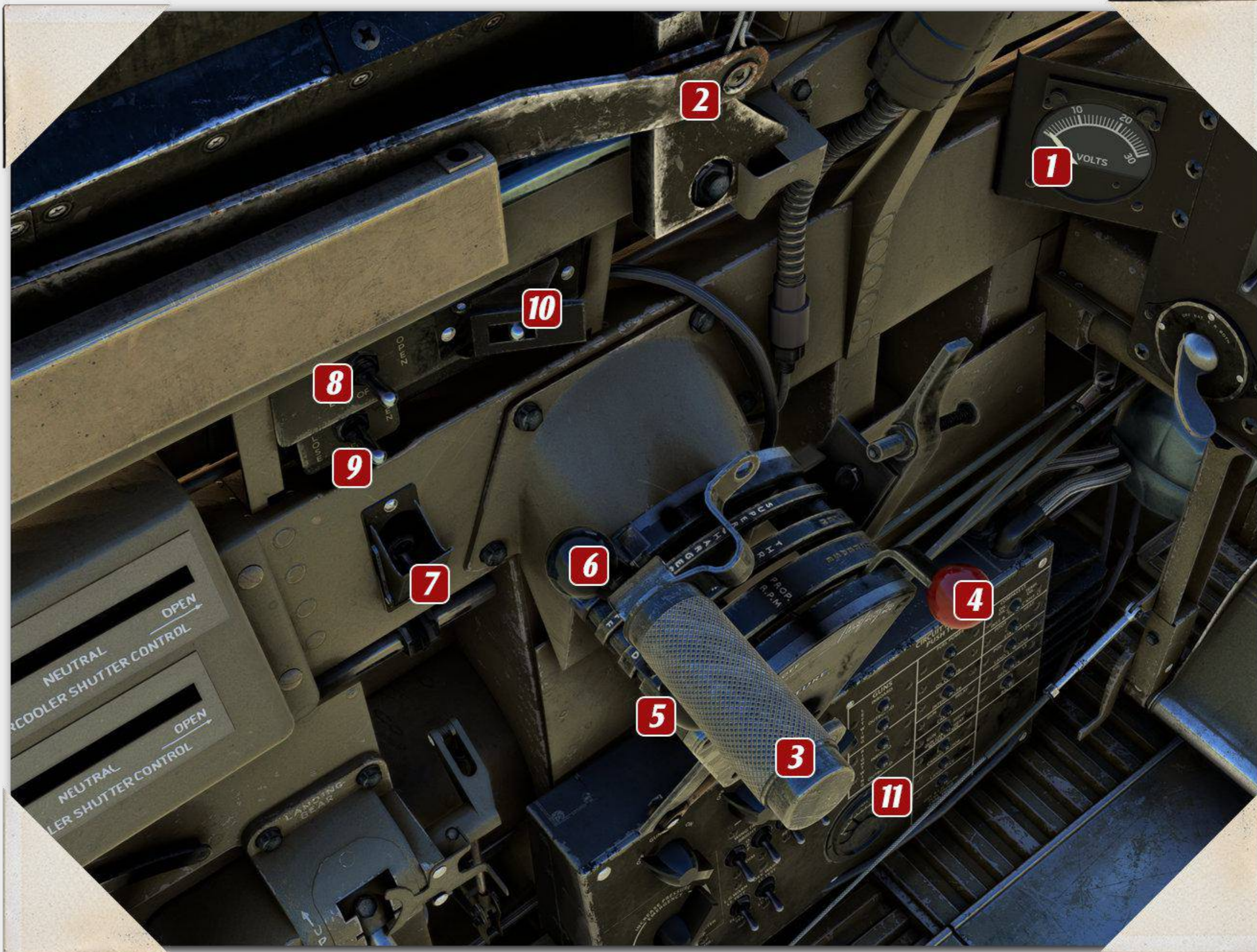
8. Keying recognitions controls (see



Cockpit - left side

This area can be found immediately to the left forward as you are sitting in the cockpit.

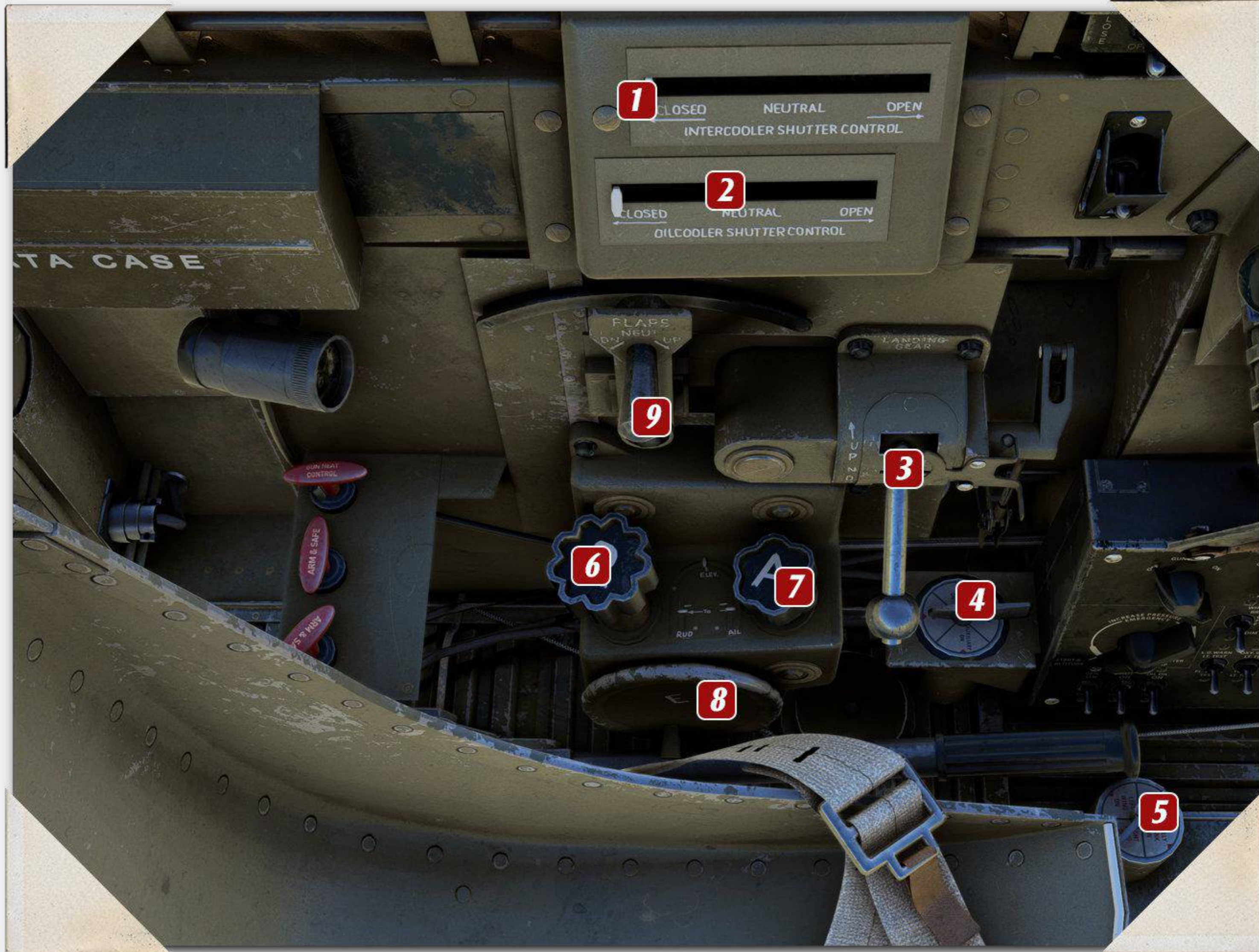
1. Voltmeter gauge
2. The P-47 is equipped with a draggable canopy . This control will open the canopy fully should you not wish to drag it open.
3. Throttle (mouse area is on end of throttle due to other levers underneath the throttle - as designed)
4. Mixture control
5. Propeller pitch control
6. Boost control. (See features section on the implementation of this function)
7. Guncamera switch (inop)
8. Intercooler doors switch (click either side of the centre of the switch to move it in that direction)
9. Oil cooler doors switch (click either side of the centre of the switch to move it in that direction)
10. Options switch (see features section)
11. Fuse box. See section to follow for more information.



Cockpit - left side

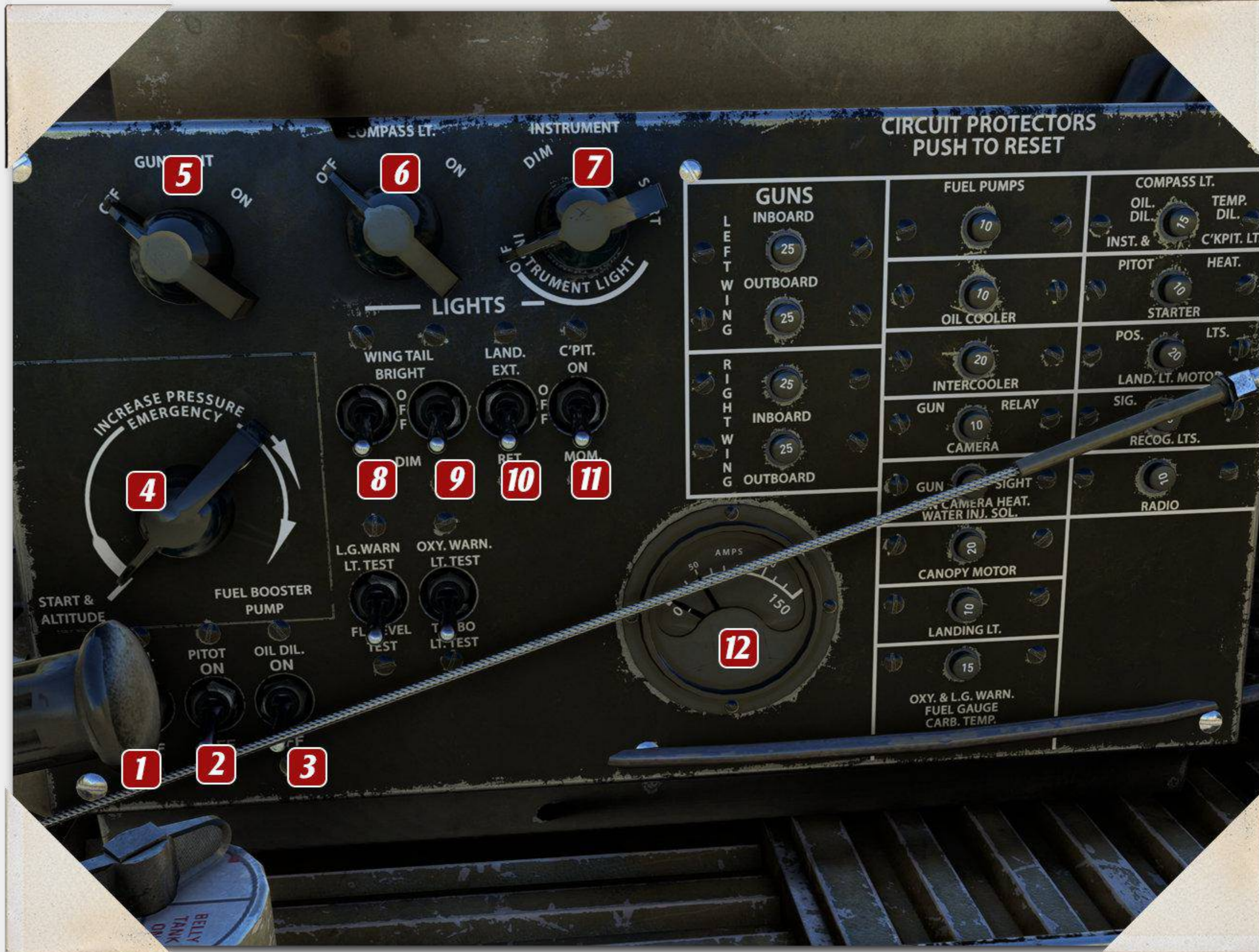
This area can be found immediately to the left side as you are sitting in the cockpit.

1. Intercooler shutter indicator
2. Oil cooler shutter indicator
3. Landing gear lever
4. Main fuel selector. (See Start section for more information)
5. External fuel tank selector (see Start section for more information)
6. Rudder trim (used in take off or you go into the hedges !)
7. Aileron trim
8. Elevator Trim
9. Flap lever. Drag the lever in the direction that you want and wait for the flap to reach your desired angle and then return to centre. (See limitations on the limitations of this system)



Cockpit - Fuse box

1. Alternator switch
2. Pitot heat switch
3. Oil dilute switch
4. Fuel pump (in real life this is a rheostat however in game it turns on the fuel pump)
5. Gunsight power (turns on the reticle for the selected gunsight)
6. Compass lights for the compass gauges on the main panel.
7. Instrument UV lighting (see following section)
8. Wing lights
9. Tail light
10. Landing light
11. Gauge downlighting.
12. Ammeter gauge



Cockpit - lighting - main

The cockpit consists of 2 flood light utility lights, switchable UV lighting and individual gauge down lighting.

Compass lighting can be controlled separately

The knob to control the panel lights (utility lights) is found on the front panel to the right of the manifold gauge. In the photo to the left the lights are at full bright value



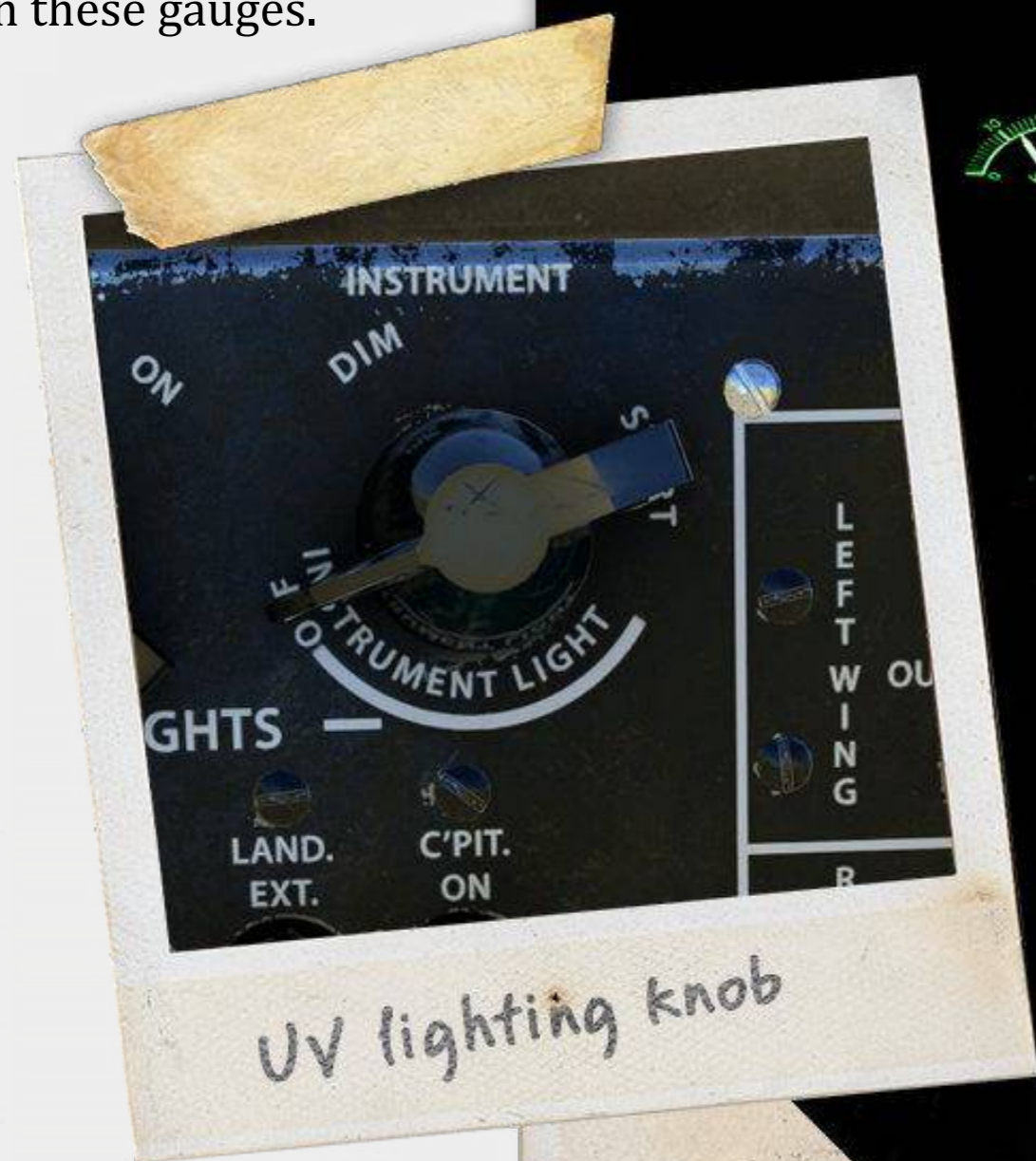
Cockpit - UV lighting

The knob to control the U.V lighting is on the fuse panel under the throttle section .

In the photo to the right the dimmer is around the 30 % point.

Beware it is possible to overdrive the UV lighting.

Please note your Bloom settings will have an effect on these gauges.



Cockpit - Instrument Lighting

The switch to control the gauge lighting is on the fuse panel under the throttle section .

In the photo to the right thethe compass lighting is always set as well.

Please note your Bloom settings will have an effect on these lights as well.

Ok with all of that out of the way lets get her started and moving shall we !



instrument lighting



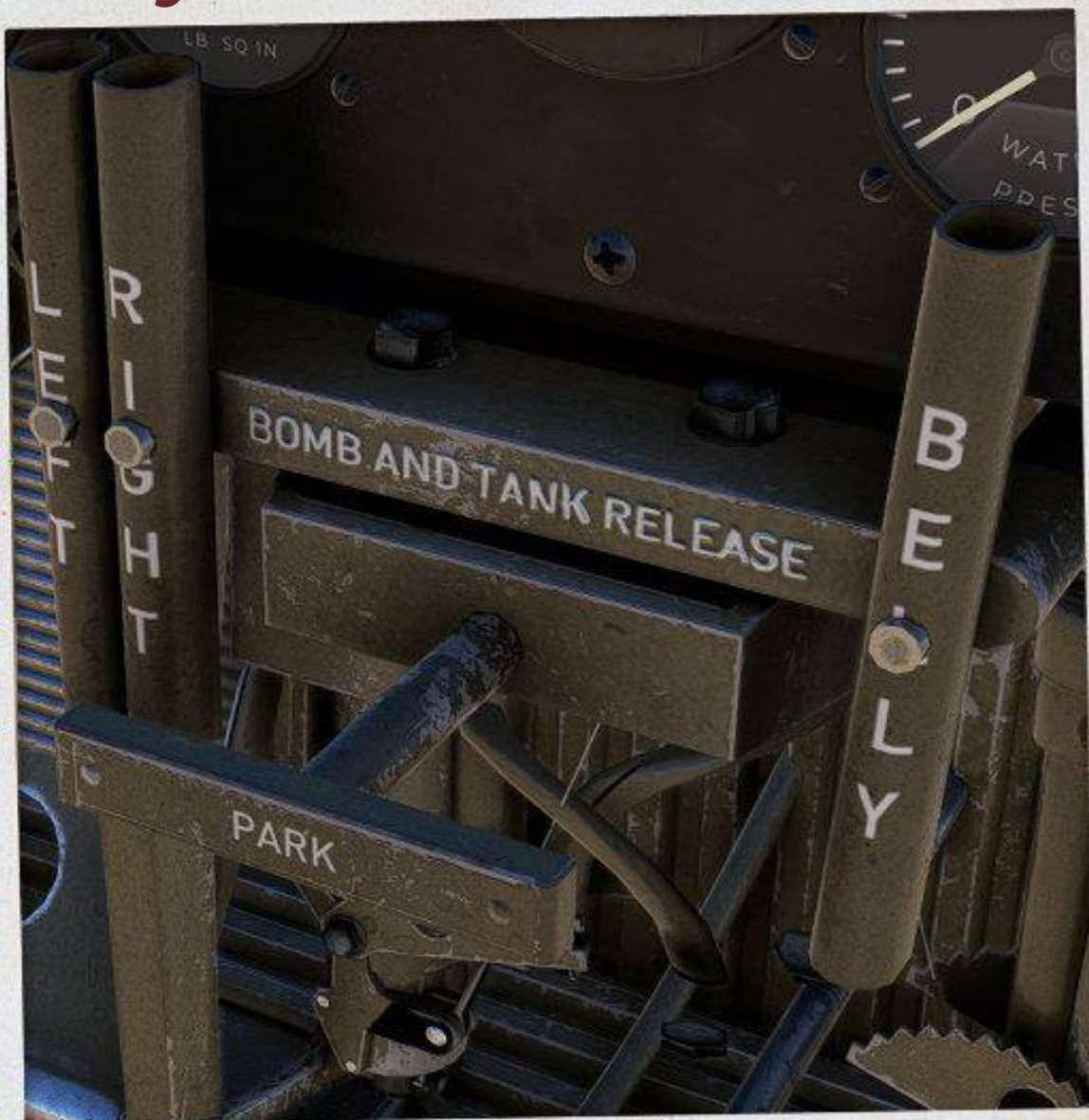
STARTING

STEP-BY-STEP GUIDE

DUXFORD BRITAIN

ADDENDUM FEATURES LAND TAKEOFF START COCKPIT SPECS

Starting a P47-D Thunderbolt



STEP 1.

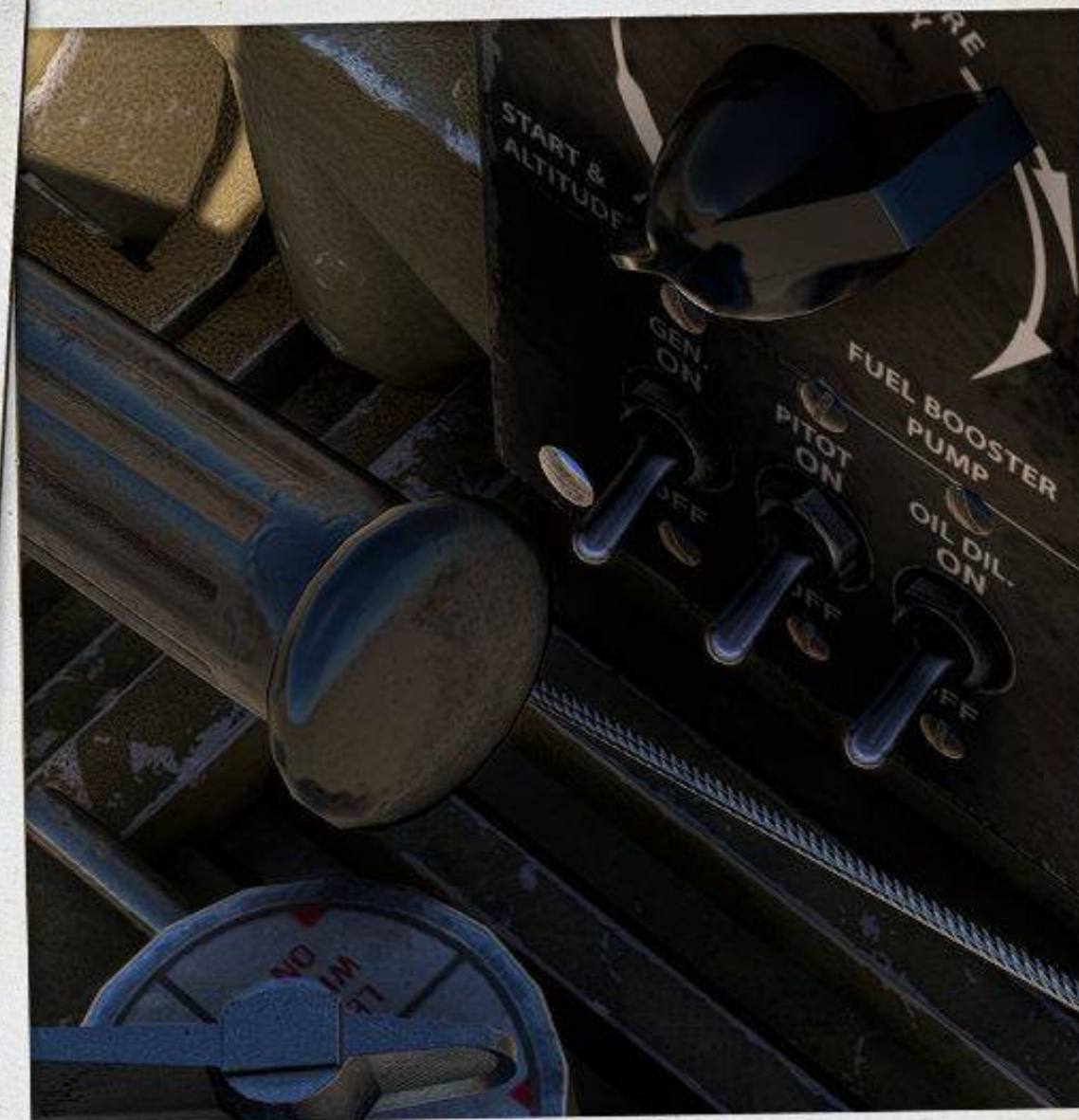
As with all aircraft ensure that you have enough fuel in the main tanks. See features section on the fuel system. .

Set the Parking brake to on. (Or use the brakes but it is easier to use the parking brake)



STEP 2.

Set the battery to on. Please note this will eventually drain to nothing. (It will take time) so be sure to read the full steps before attempting a start. Power should now be available to all the systems (well ... Available to a 40's warbird that is)



STEP 3.

On the fuse panel on the bottom left is the Alternator switch. We recommend you turn it on now so you dont need to do it later. IF following the games checklist this appears at a later date. Whilst there you could also switch on the pitot heat should that be required.

Its easier just to look down and be in the general area than move your eyepoint.

Starting a P47-D Thunderbolt



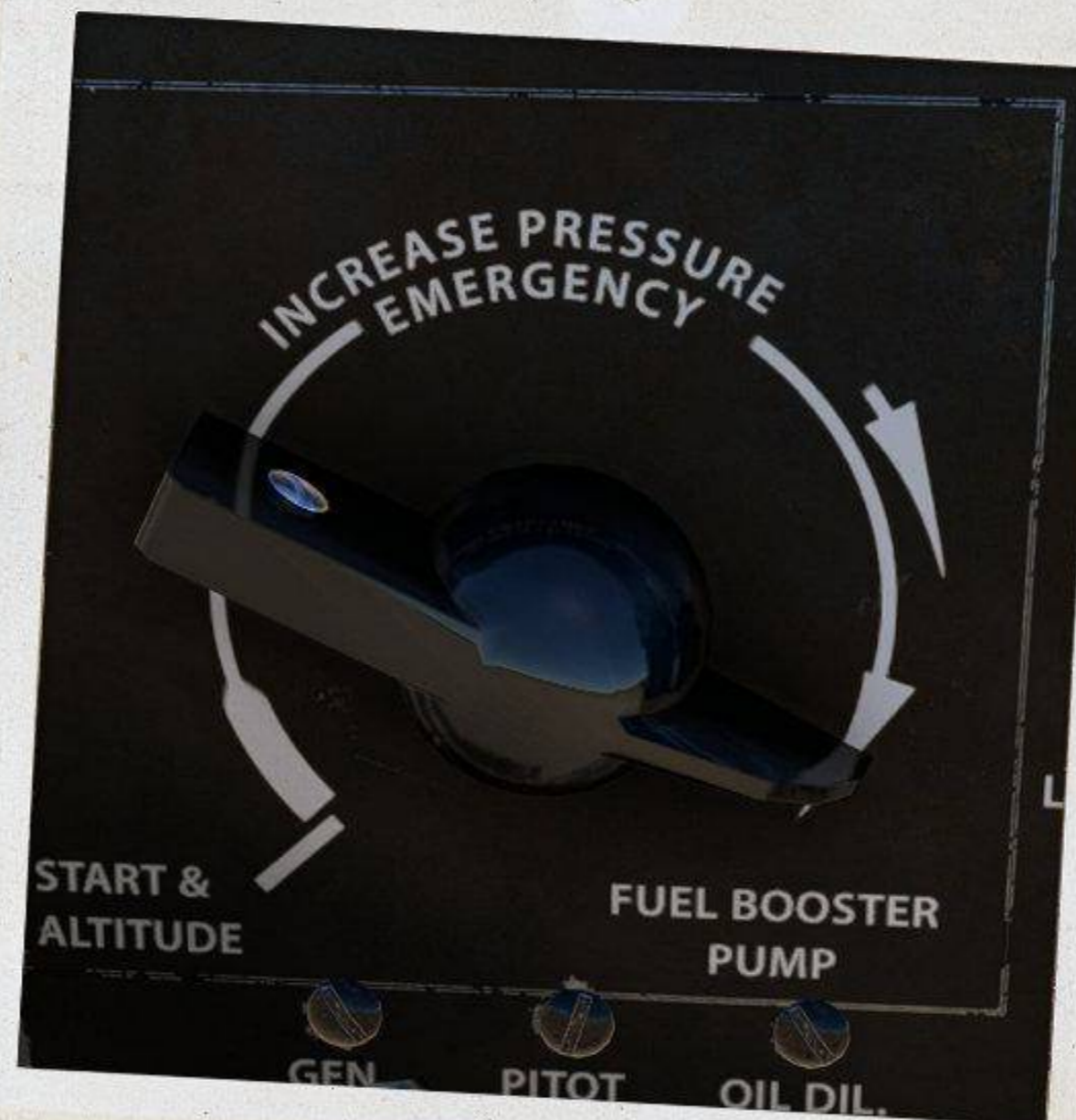
STEP 4.

Set the main fuel selector found on the left side of the cockpit below the gear lever to Main tanks.

Do not use the drop tanks or the main AUX to start the P-47 Thunderbolt.

Well you could but you would be wrong.

See features section for more information on the fuel system.



STEP 5.

Set the fuel booter pump to on. In the real world this is a gradual setting allowing more control on the pressure in the fuel lines. At this time this functionality is not available to the game.

Note the fuel pressure in the lines should be around 10 psi. This gauge is number 21 in the front panel guide.



STEP 6.

Set the magnetos to both. This control is also close to the fuel gauge so now would be a good time to ensure that you have enough fuel.

Again for more information on the fuel system read the features section.

Starting a P47-D Thunderbolt



STEP 7.

Set the mixture to Auto rich. This lever in real life is more like a selector rather than a lever however we are aware that some people have mapped peripherals . As such this is a stock Mixture lever. Whilst on the throttle quadrant ensure the boost lever is fully back. You dont want to start a thunderbolt with boost. Ask us how we know!



STEP 8.

Pump the primer at least 2 times. Depending on outside temperature this could be as much as 5 times. Use your judgement.

Since you are here you could use the cowl flaps lever if you are in a hot climate so you dont need to remember later.



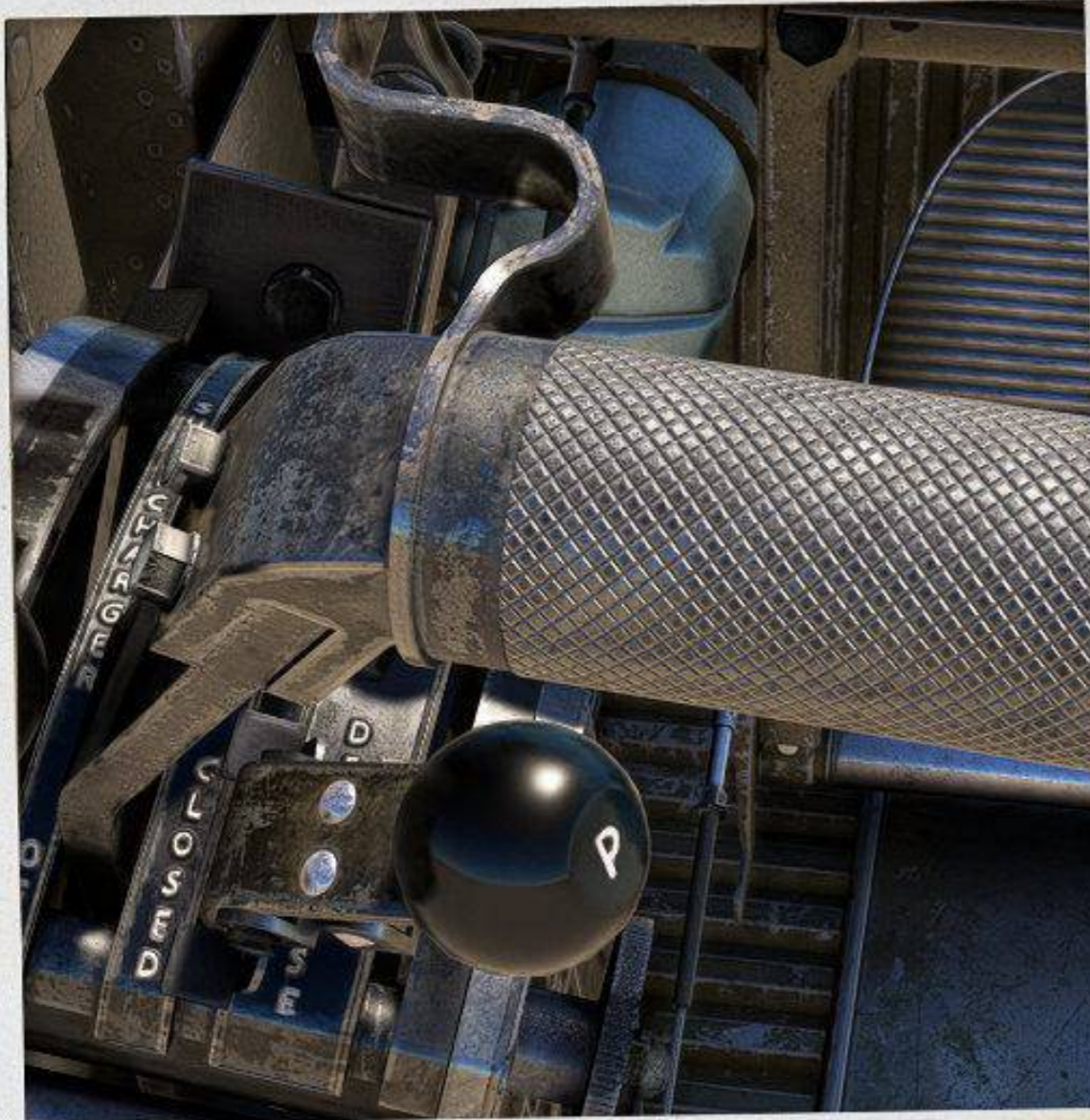
STEP 9.

Jog the starter switch to Engage to seat the brushes in the energiser. The code wont allow you to break the engine. This is a very momentary click.

Then hold the starter switch down in the energise position for 10 seconds.

In the real plane its 15 seconds ... No one has time for that! But you will need to hold it for at least 10 seconds.

Starting a P47-D Thunderbolt



STEP 10.

Crack the throttle ever so much (remember you have the parking brake on) but about 5 % should be enough. Also double check that boost lever.

For more information on the boost functionality check the features section.



STEP 11.

Hold the starter in the down position (or energise) until the engine starts. Once it starts let the switch go back to the middle position.



STEP 12.

Directly under the starting area is the suction gauge (required for gauges) and the tri gauge for oil temp , pressure and fuel pressure. Check all.

Starting a P47-D Thunderbolt



STEP 13.

Once the engine is fully started and warmed up, turn off the fuel pump. Whilst there to save time also set the nav lights and gun reticle if you are going on a sortie.



STEP 14.

Switch the magneto to either Right magneto or left to check for magneto drop. It should drop by around 100 rpm. This will of course be down to your position of the throttle.



STEP 15.

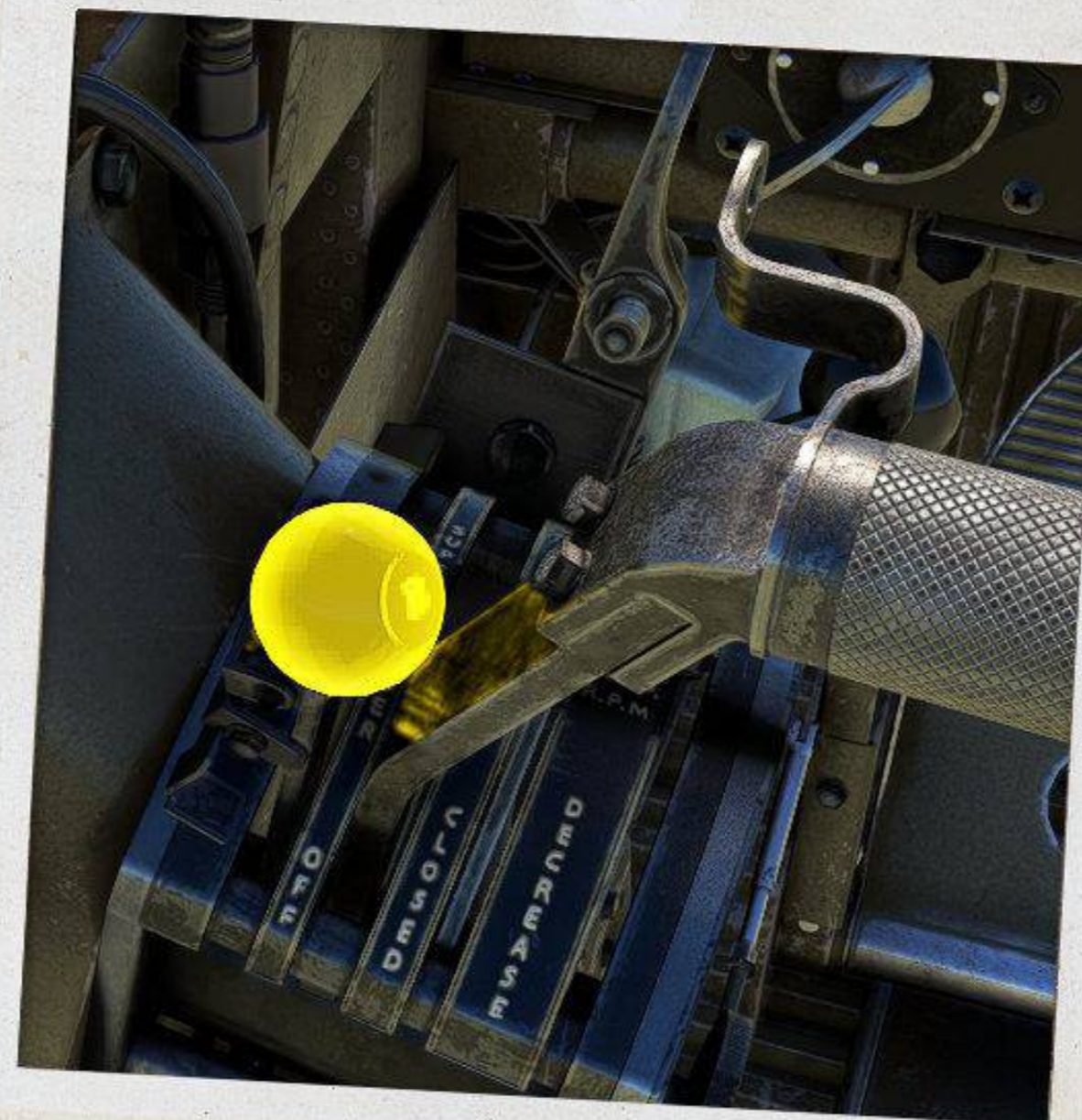
Now would be a good time to open the intercooler shutters and oil cooler shutters.

Lets get the bird into the air where she belongs!

Boost and the P47-D Thunderbolt



Of vital import is the boost lever and how you manage your boost. When you first start the plane the boost lever should be right back. That will turn on the Turbine overspeed warning light. This is expected.



Moving the boost lever a notch or 2 forward will then make the light start to flash. This is what you are trying to achieve. Try to keep the turbine overspeed light always flashing.

What you are doing with using this lever is opening and closing the wastegate essentially adding or removing air from the turbine flow.



Moving the boost lever past the throttle lever to full will then stop the light flashing and it will be on all the time. Do not do this.

Pilots of the day and the Operating handbook used to apply "boost lever never forward of the throttle lever" and that is how you can fly the P-47D in MSFS.

TAXI & TAKEOFF

STEP-BY-STEP GUIDE

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Guam - present day

SPECS

COCKPIT

START

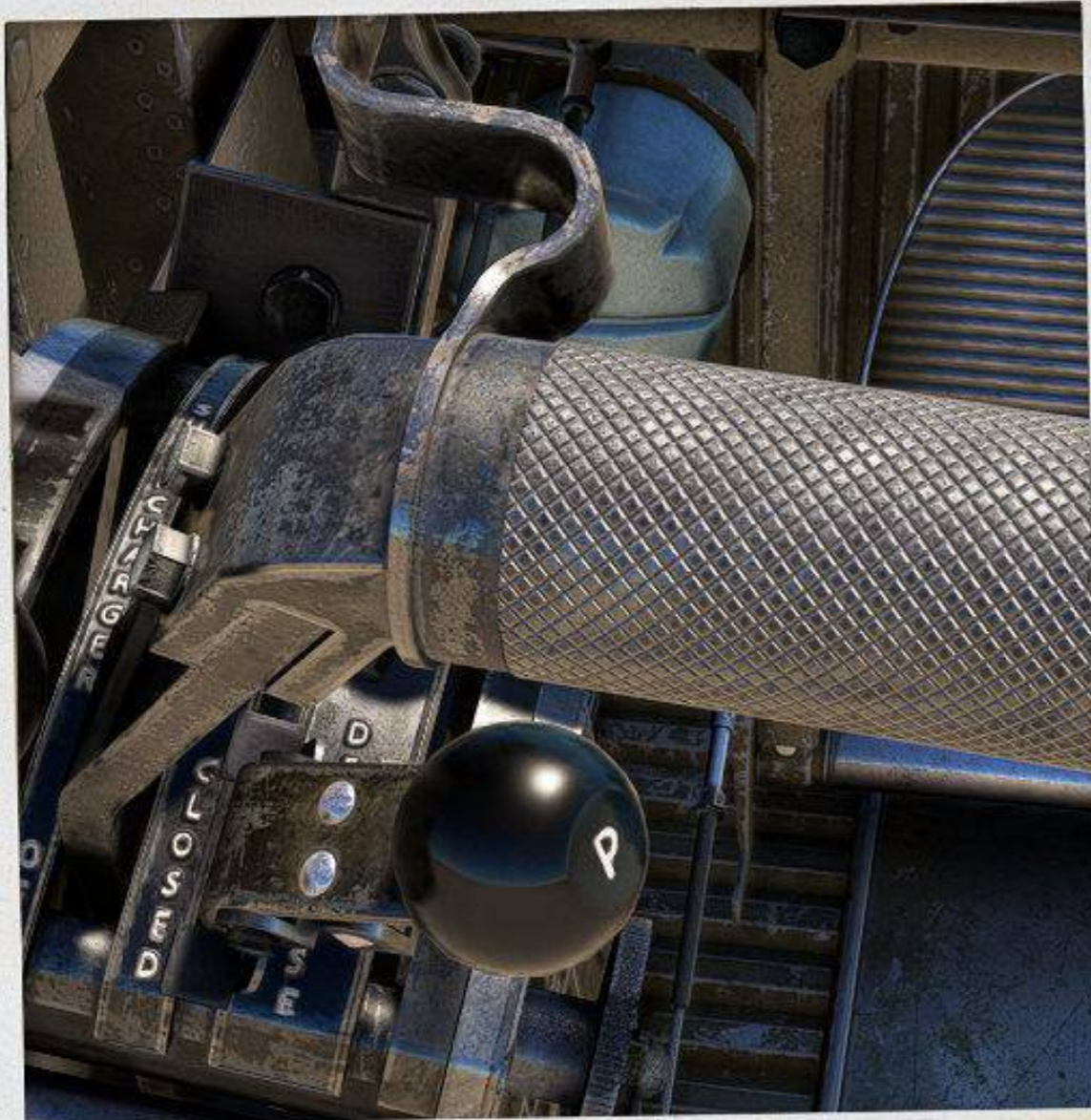
TAKEOFF

LAND

FEATURES

ADDENDUM

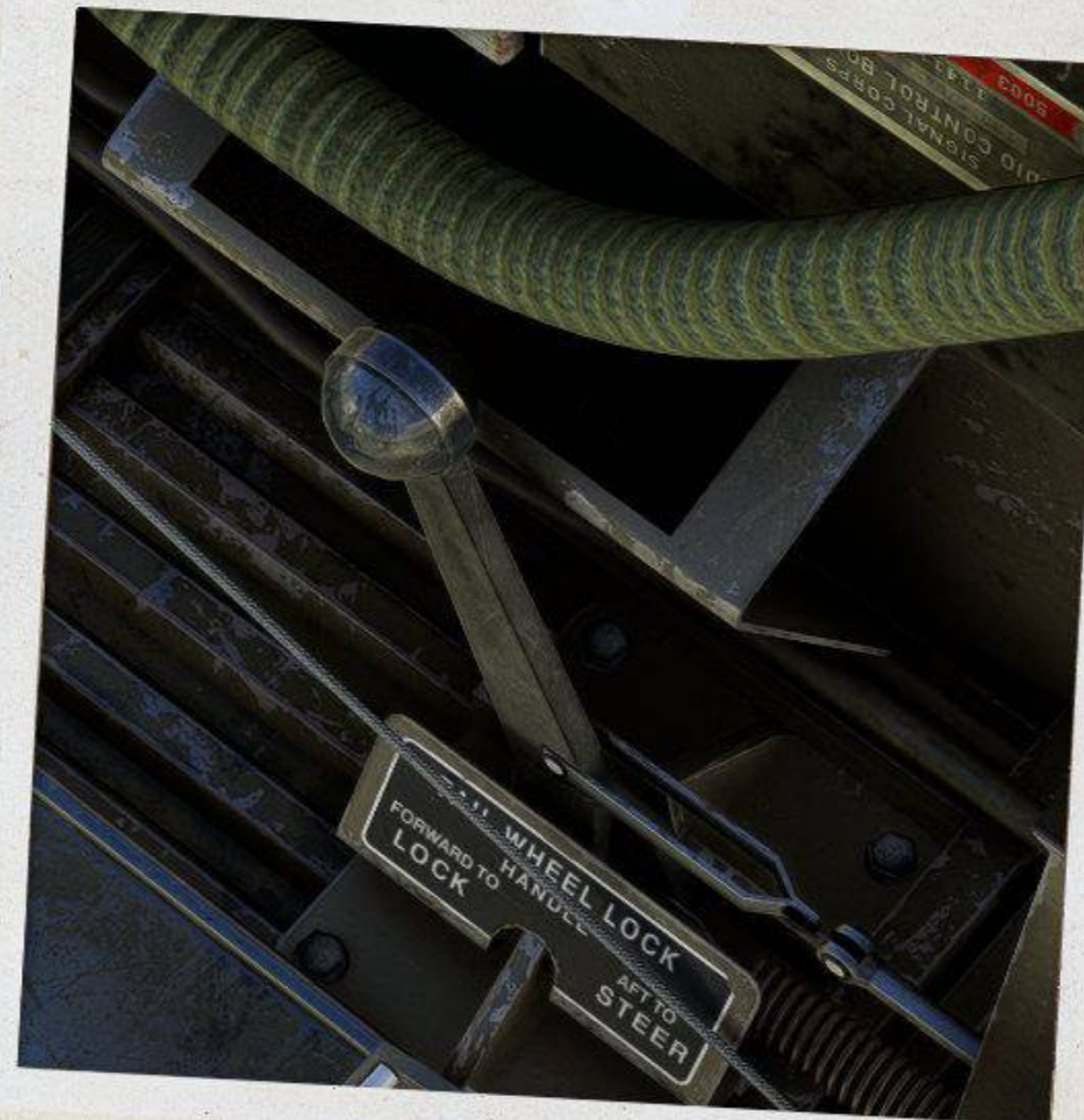
Taxiing



STEP 1.

Before you release the park brake ensure your throttle is in idle position and the WEP is disabled (so you dont accidentally run it on take-off)

If you have your game set to turn off park brake with a tap of the brakes then do this other wise use the keys or the red lever to release the parking brake . Apply brakes



STEP 2.

As you taxi you will need to ensure this lever is in the steer position. Utilising the S turn method as she's quite a big lass to look over.

Once you have reached the point at which you want to take off what we like to do is to put the tail-wheel lock on and the parking brake to on as well. We now need to set the trim controls and then await clearance to launch into the skies.



STEP 3.

To counter the torque effect from the engine you need to set rudder trim before you take off. In this case rotate the rudder trim to about 6 degrees right. Remember to reset this once you are airbourne.

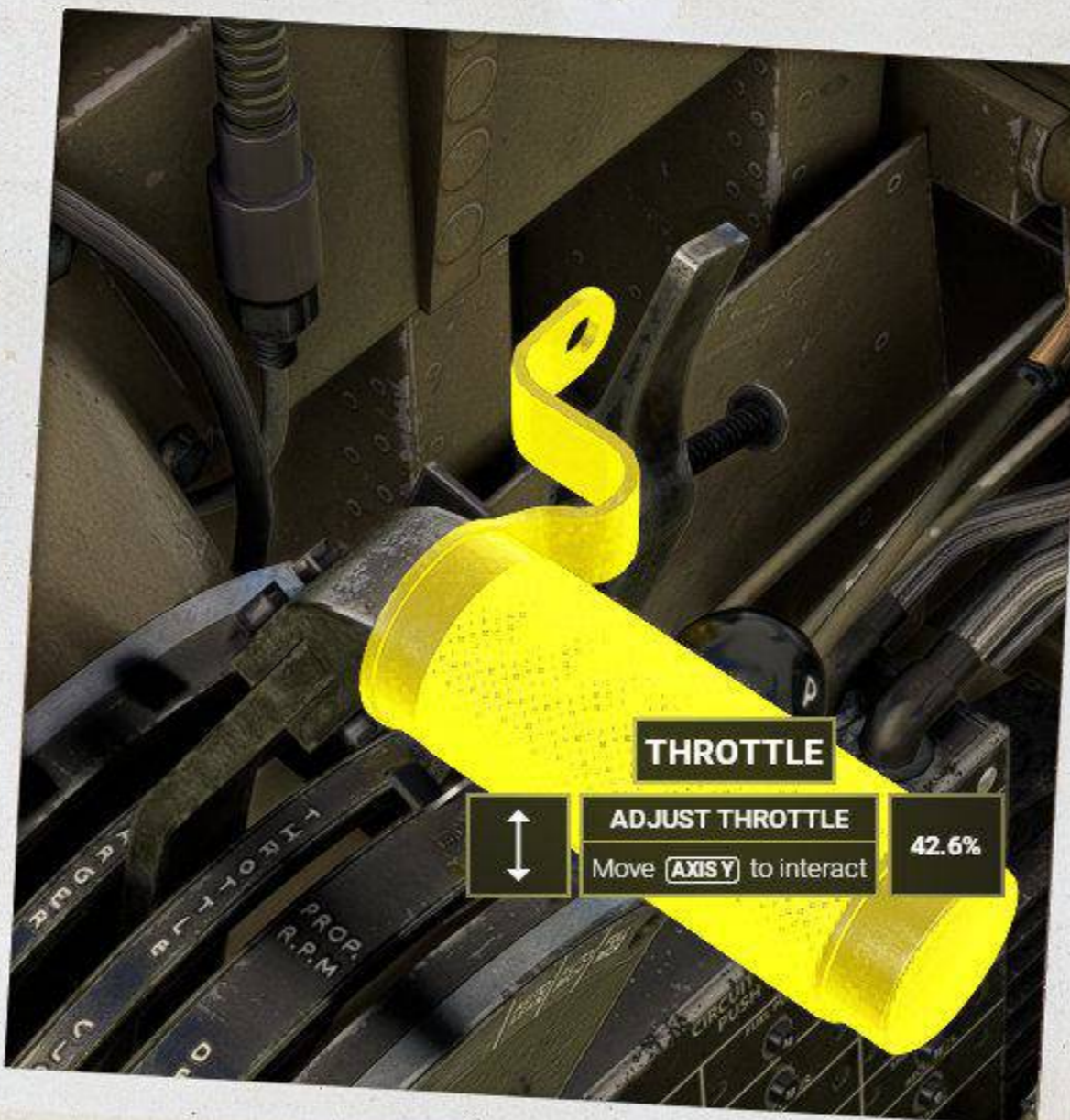
Takeoff



STEP 4.

Remember to keep the boost lever behind the throttle at most times (there are times when you need it but take off is not one of them). Slowly increase the throttle to approx 2700 rpm.

The P47 is better suited to longer airfields. There is no need to ram the throttle to the full.



STEP 5.

Increase the throttle to achieve 2700 Rpm. If you have the tailwheel lock on then small (or perhaps not even needed) corrections are used. Wait for the rear of the aircraft come up.



STEP 6.

As the rear tail comes up you need very little and precise movements on the rudder at this point. We recommend that you check your sensitivity settings in game . The P-47D will bite you should you put too much rudder in at this point.

Once speed reaches around 100 mph push forward slightly on the stick and then rotate.

Takeoff



STEP 7.

Pay attention to the gear indicators. When the gear is in the transition phase the right light will glow and then go out once the gear is in the up position.

Congratulations you are in the air. Time to start your mission or sortie.

Information on the boost and turbo functionality can be found in the features section



NOTE!

The P-47D is a tricky plane to master when on the ground. If you ram the throttle all the way to the stops and apply gob loads (technical term) of rudder to correct ground handling you will put the plane into the nearest hedge very quickly . You need to be careful with your throttle hand and just as careful with your rudder controls.

This addon has been developed to stock animation and stock code. Also it is made for MODERN Flight model only.

DO NOT TRY TO FLY THIS PLANE WITH LEGACY FLIGHT MODEL.

If you contact us with flight issues that are attributable to you trying to fly with legacy mode a kitten is killed. And we dont want to see that do we.



LANDING

STEP-BY-STEP GUIDE

Guam - present day

Landing



So now that you have completed your flight and mission you now need to get the plane into landing configuration.

First put the fuel selector onto the tank that has the most fuel in the tank.

Also put the fuel booster pump on for safety point of view.



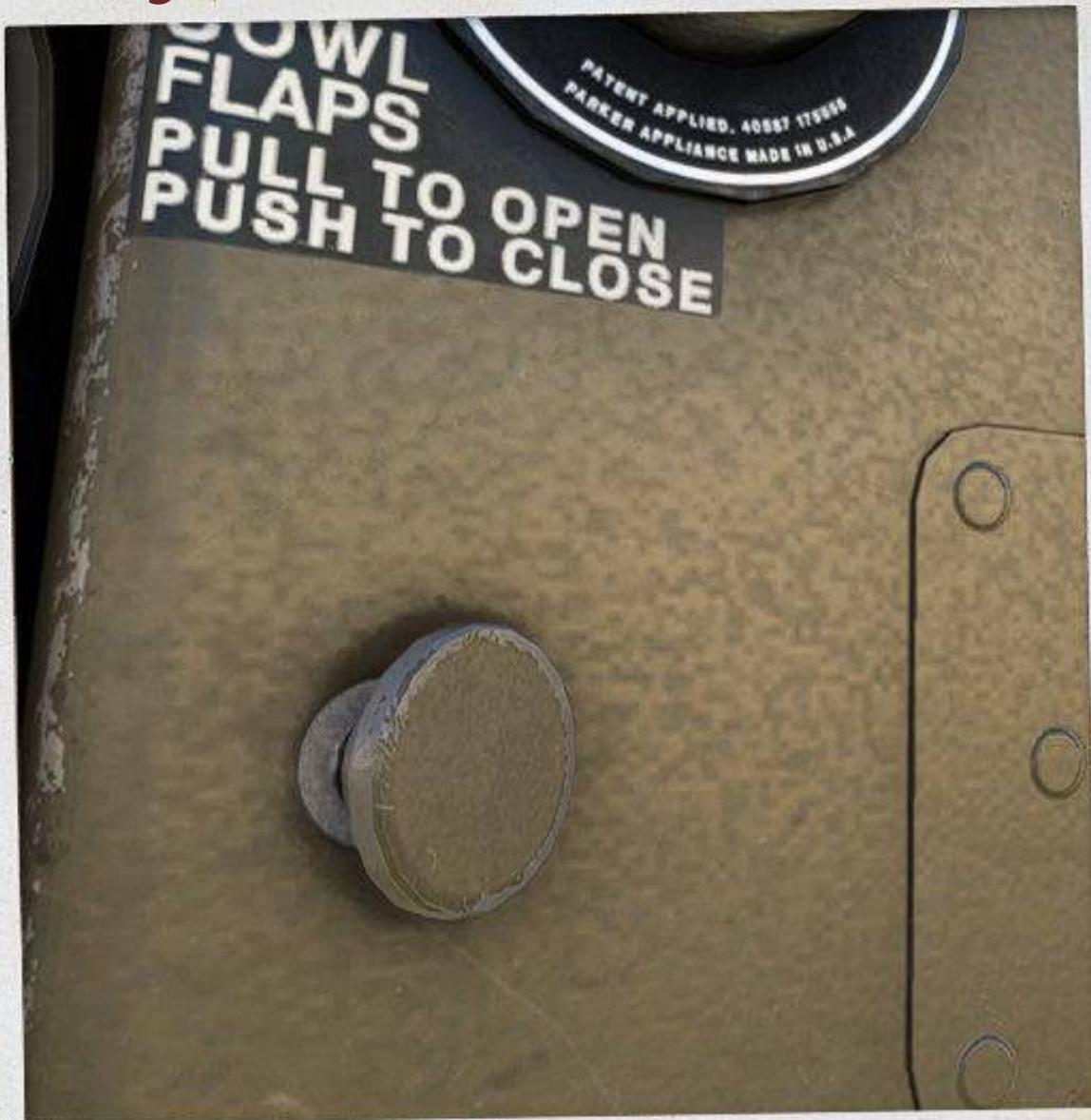
Lower the gear and the flaps to full. Pay attention to your speed here. The P47 is a robust aircraft and can actually handle quite a bit of speed before flap damage occurs. Be careful with full flaps, speed bleeds off super quickly.

The trick is to keep the speed relative quick in that 150 -200 mph range.



Ensure that the gear is fully down and in the locked position. The gear indicator will light on the left side.

Landing



Close the cowl flaps. Whilst your attention is in this part of the cockpit ensure all gauges are in the correct areas. Of concern at this point is the fuel pressure.



Open the canopy so that you can check that the flaps are indeed down. The gear should be down and checked in the previous step



Speed should be around 130 mph. Keep just enough power on to maintain this speed. It is possible to do a power approach in the P-47 but thats a manouvre for a different time. Lets get her down first!

Landing



As you near the landing zone you might find it helpful to put a little nose down to see a little better. Or use the landing camera view taken much closer to the centre of the plane. Ensure the tailwheel lock is off.



You can very easily get into trouble if you let your airspeed below 100 mph. The trick here is to approach the landing zone in a 3 point position. Essentially placing the plane on the ground rather than forcing it. For a big plane she needs finesse.

This is where most pilots will have the most problems. Its tricky to master but when you do... It feels great!



With luck and skill on your side you should now be down on the ground. Follow the shut down procedures in the in game checklist. Just get off the main runway as soon as possible. Your fellow Thunderbolt pilots are waiting for their turn.

Well done you have flown a P-47 Thunderbolt!

FEATURES & OPTIONS

FAMILIARISATION GUIDE

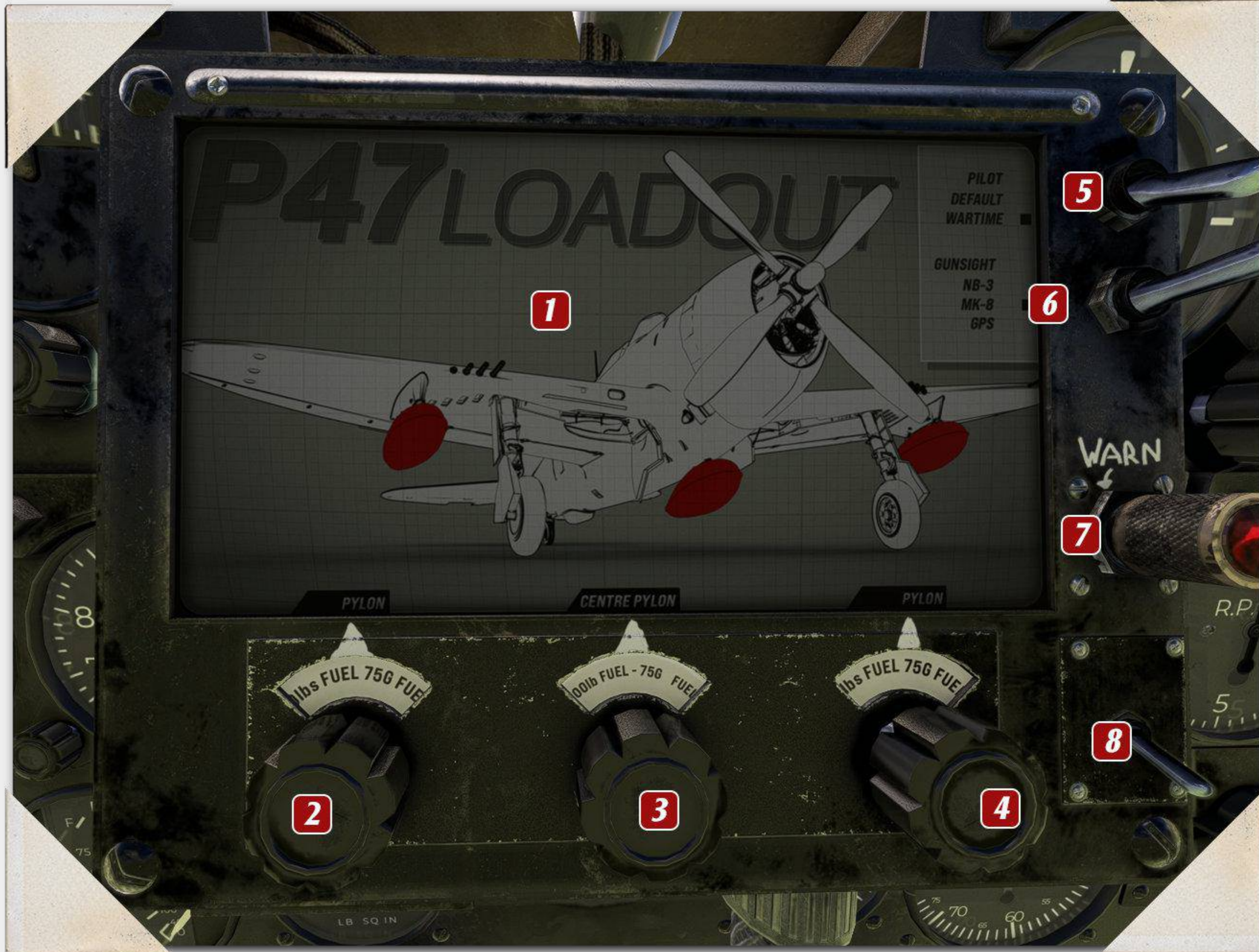
Features : Options panel

NOTE: Please do not fly with the options panel open. Some of the fuel logic is dependent on it being closed once you have chosen your options. Also it occludes some rather important gauges.

1. Visual readout of your selection
2. Left pylon
3. Centre pylon
4. Right pylon
5. Pilot switcher (Asobo stock / Wartime)
6. Gunsight switcher (MK8 , NB3 , GPS)
7. Warning light for out of CG.
8. Removes the pylons. Only useable should there be no stores on the wings.

This section has got a developer commentary youtube video made should you want a little more in depth on how these things work.

Its unscripted. You have been warned.



Features : Option - Pilots

This switch lets you switch between the WW2 era pilot (Jarvis) or the Asobo stock pilot. Please note. If you have set your pilot to a certain version in your settings then this is the pilot you should see. We have tried to overwrite it with the male casual.

Due to the way that the pilots are hidden, the change out to the other pilot may take a little time. Please be patient.



Features : Option - Gunsight - GPS

The switch lets you select between the 2 gunsights the P-47D razorback was equipped with and a modern GPS.

Radios wise the real plane had a preset system. Since that is not available and most want the GPS... We decided on a GPS only. **Stock GPS used**



Options panel



new fangled



N3-B gunsight as fitted



mk-8 gunsight

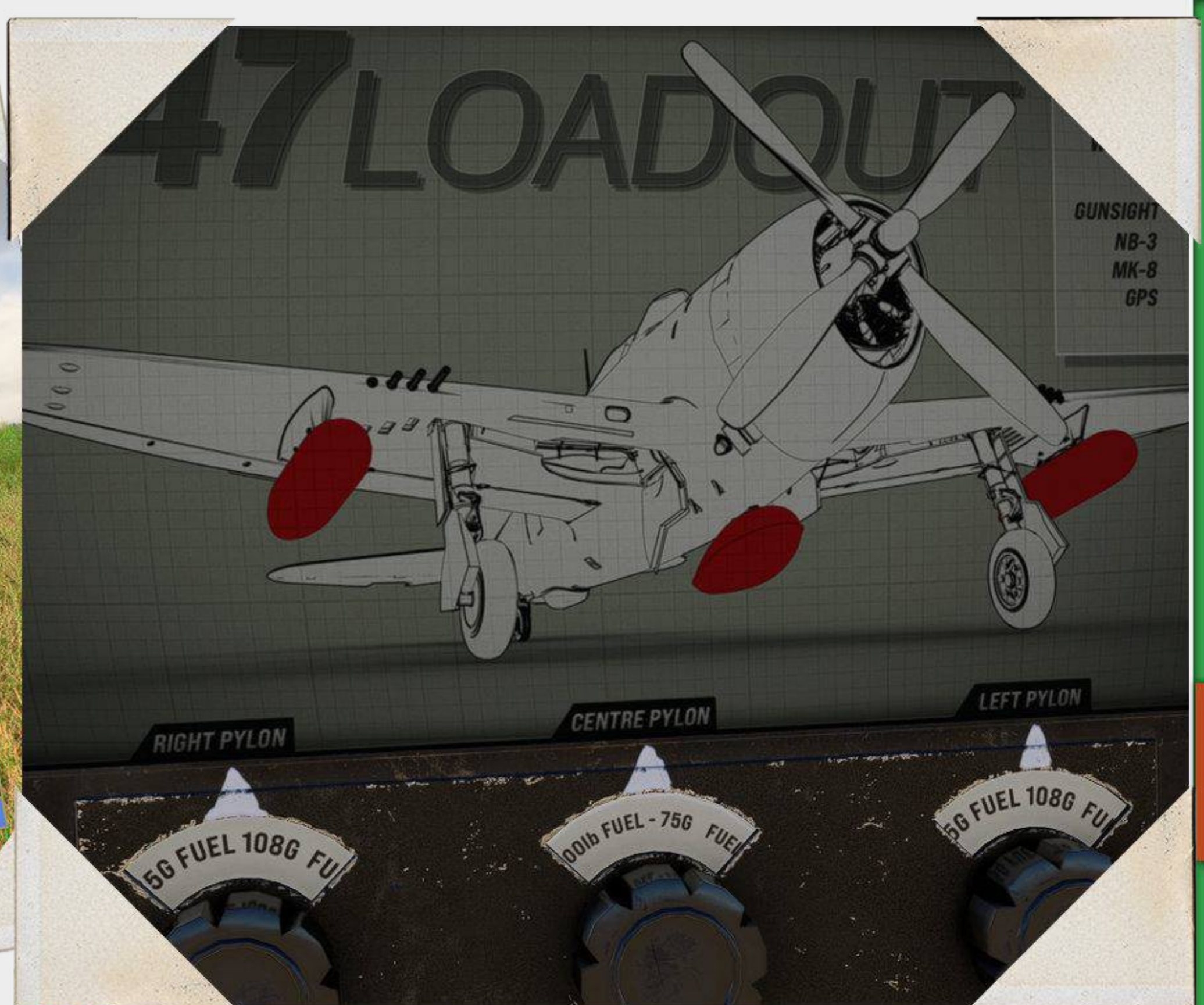
Features : Fuel



With the options panel out you will not be able to modify these values

Code logic dictates that if there is a fuel tank on a pylon you obviously cant add a bomb to that pylon

Ground crew would just laugh at you.



When using the loadout knobs a couple of conditions need to be met.

When you load the tank that you require that tank amount is added to the weight and balance section of the game.

In this case to 108 gallon tanks on the wing and a 75 gallon on the centre stores.

Features : Fuel



75 gallon tank

Fuel Loadout

Once you have made your choice ensure that you close the options panel. This allows for the fuel to be modified to be less should you wish to only have half the tank of fuel used. It also allows for the tanks to be used and drain correctly.

Tip: Close the options panel once you have set your options.

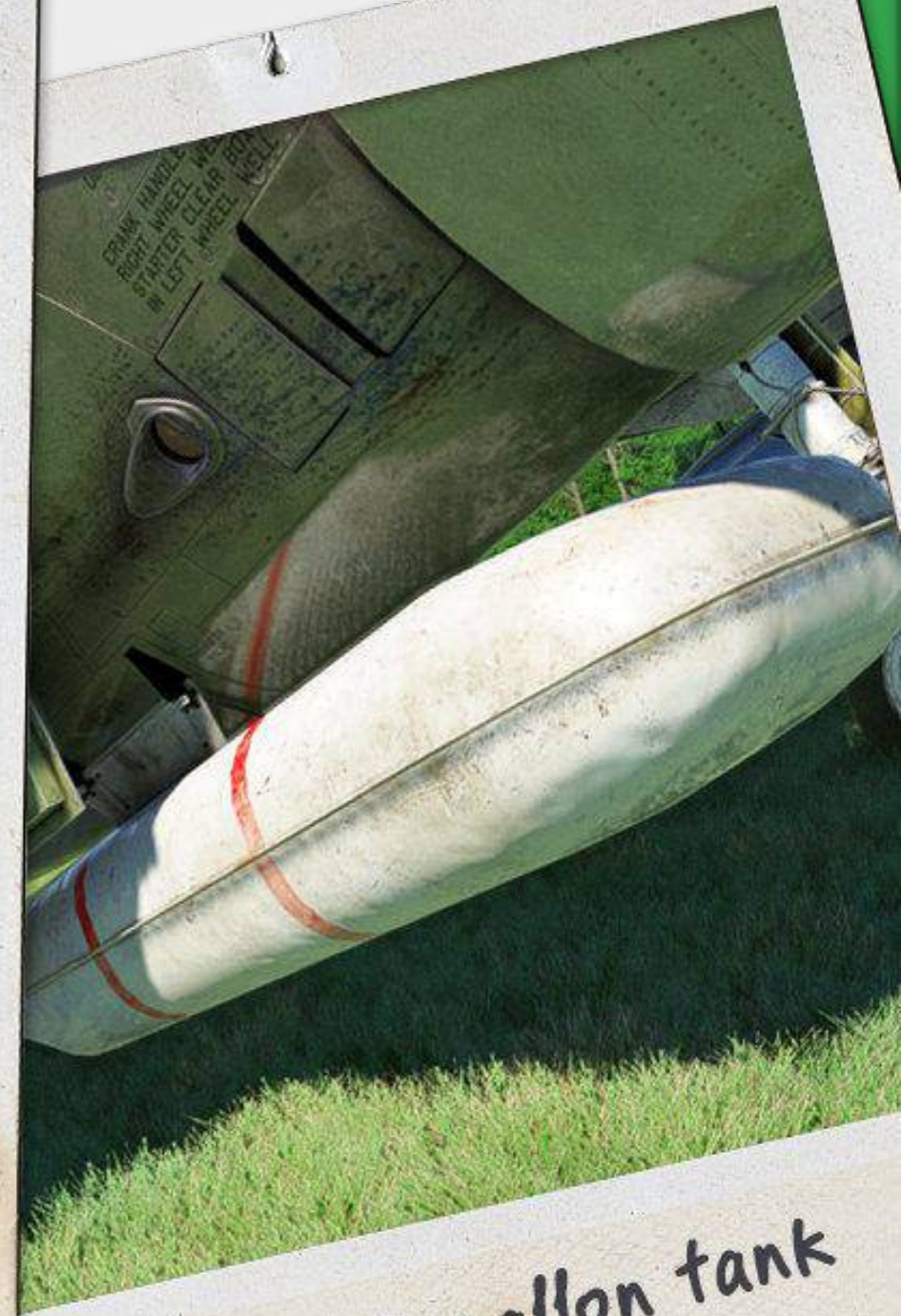
If you are wondering why we didnt use the P-51 weight based loadout controls feedback was that it was a hassle to use.



108 gallon tank



150 gallon tank



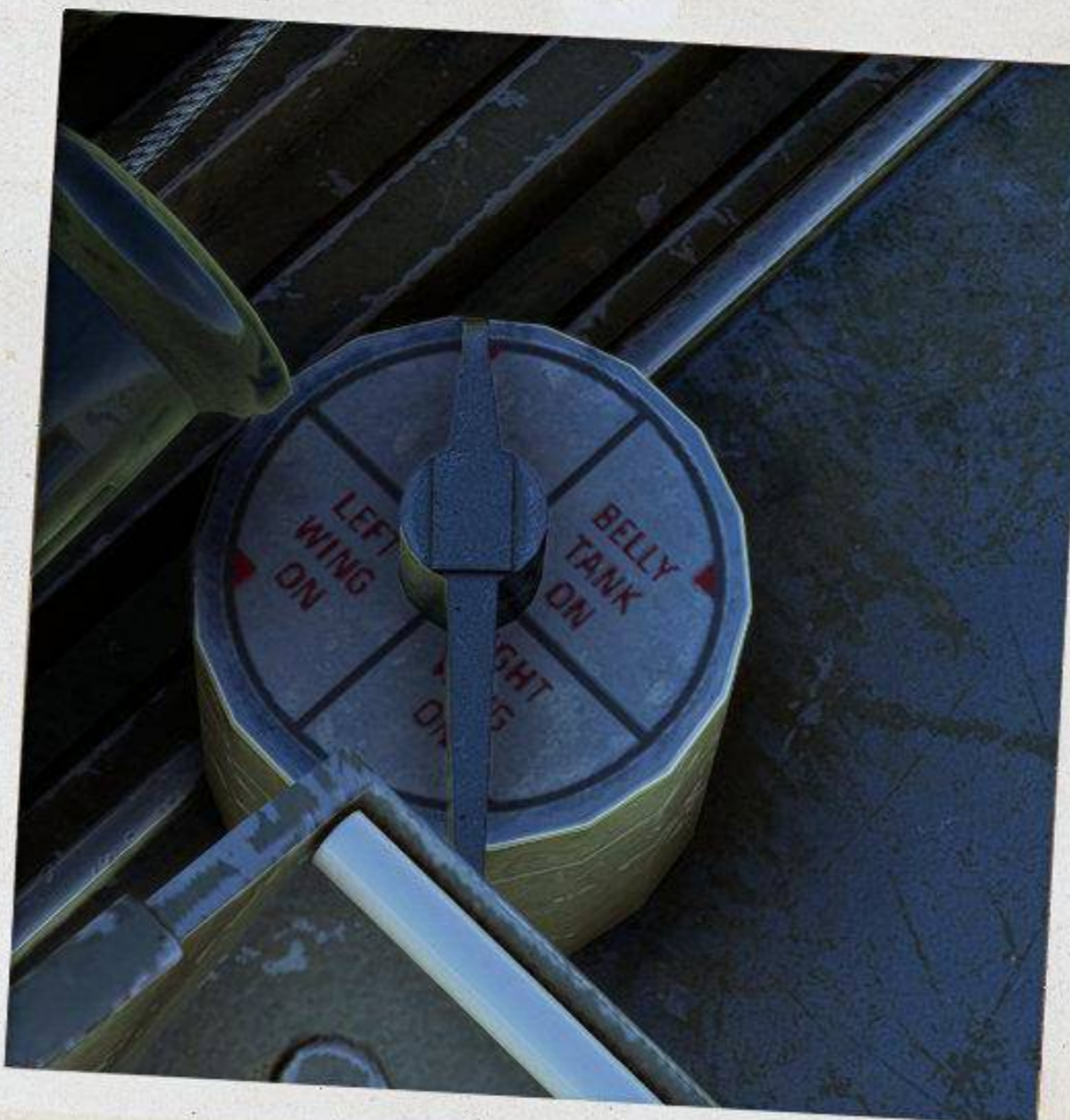
200 gallon tank

Features : Fuel management



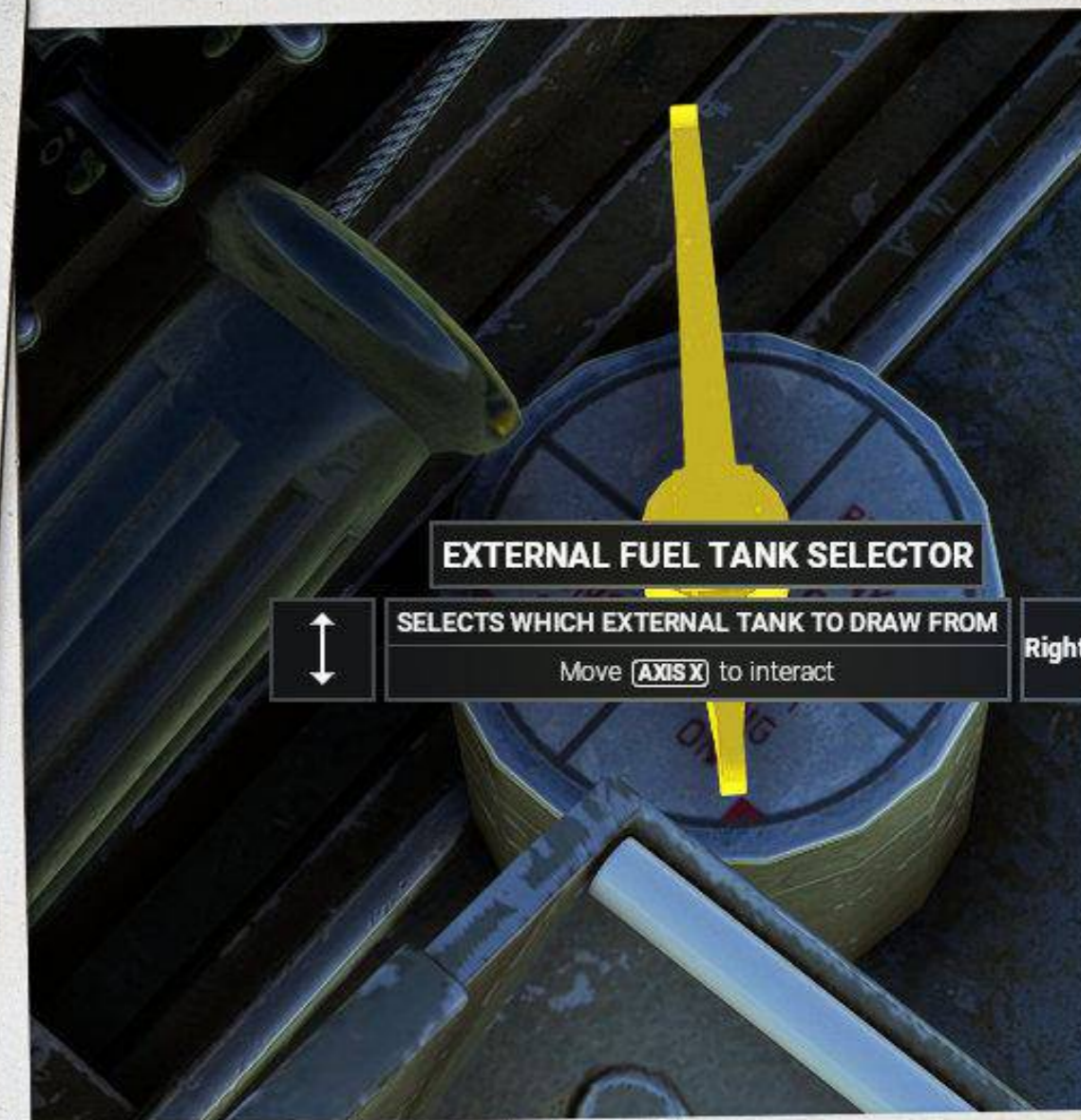
With the main fuel selector in this position (first rotation from Off) the fuel selector will choose to draw from whatever tank you have selected on the External tank selector.

Ensure you actually have external tanks to draw from.



Should you choose the External tank on the main fuel tank selector first **BEFORE** choosing a tank on the second External tank selector knob... You have time.

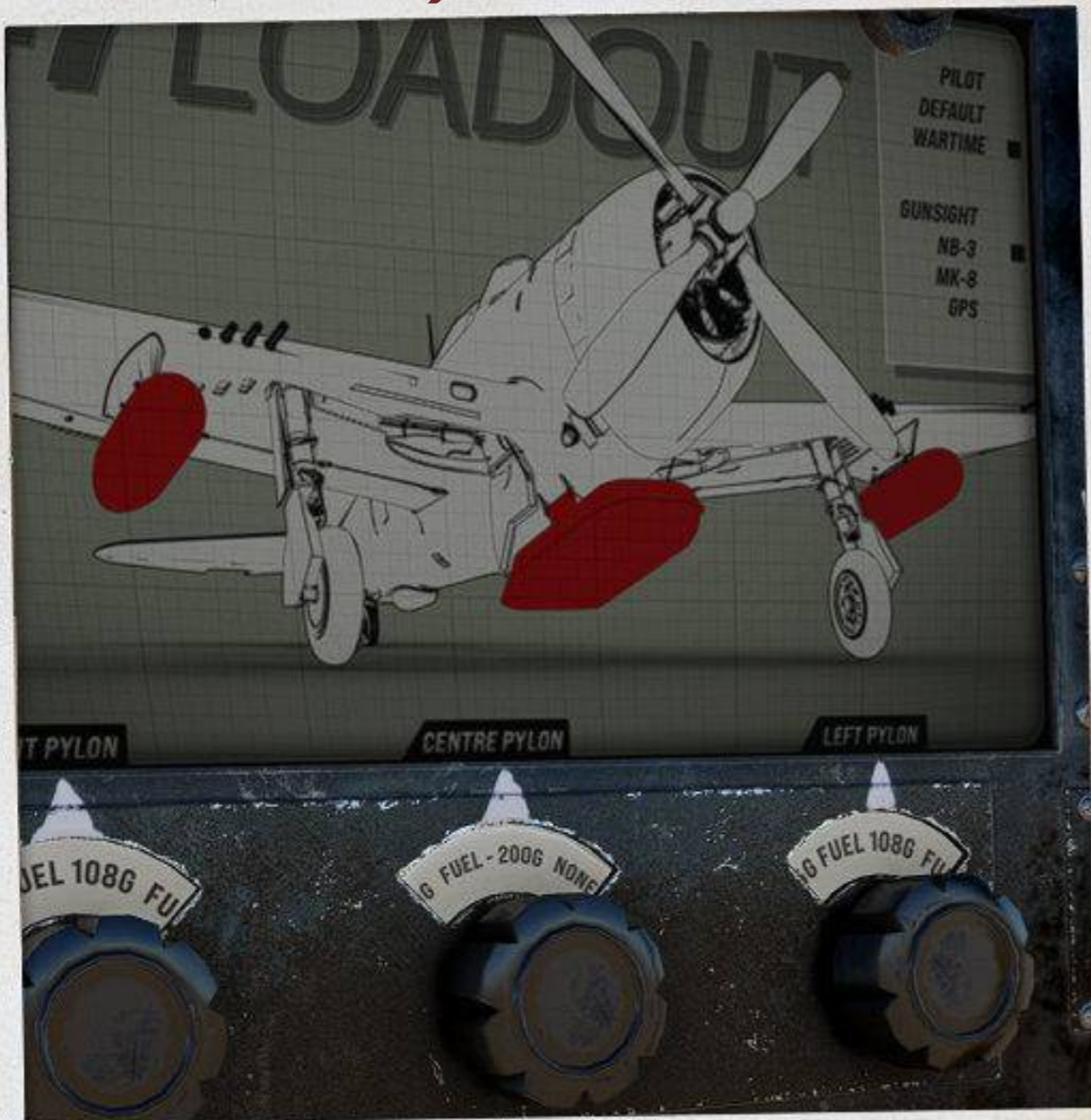
There is a small amount of fuel left in the lines to allow for the engine to still run. But dont waste time. Immediately set a tank to draw from .



Here we have selected the right stores to draw from (after ensuring there is actually a tank available. The P-47 is NOT equipped with a fuel gauge for external tanks. So like old motorcycles it is up to you to know when that tank is dry.

Also use this external fuel tank selector to manage your weight by selecting the left or right fuel tanks.

Features : Stores jettison



When you are ready to land it is vital that you do not land with external fuel tanks attached. They should be jettisoned. To that end the jettison levers next to the parking brake are utilised.

In the photo above you can see we have set a large fuel amount.



We have in this photo used the belly and right stores jettison levers.

Now whilst we could have coded these to be one use only and to remove the fuel from the dropped tanks.... We felt that you might want to just have some fun here.



This however means you can cheat by having full tanks but not "show them ". Whilst we wouldn't do this it's your plane and you can do whatever you like.

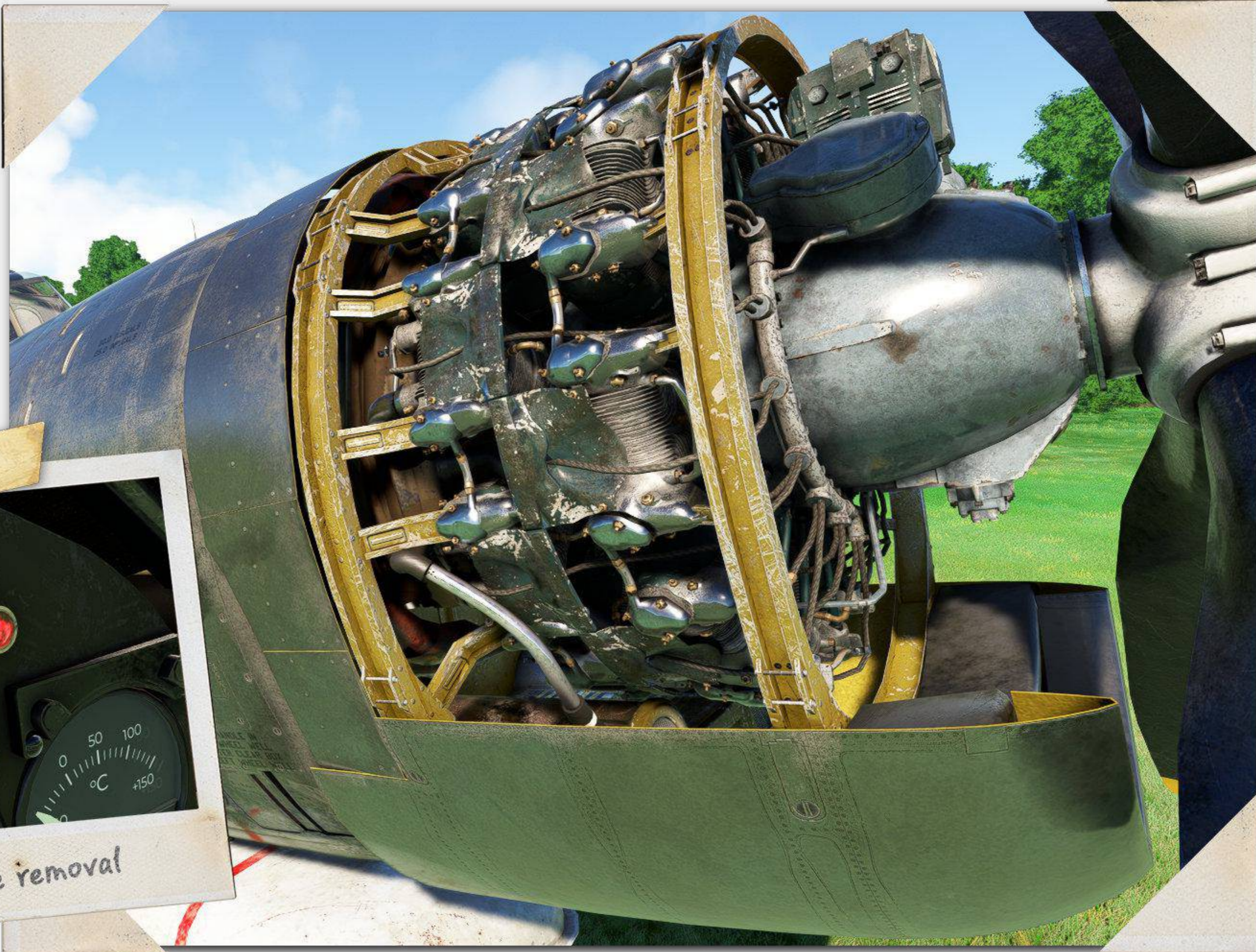
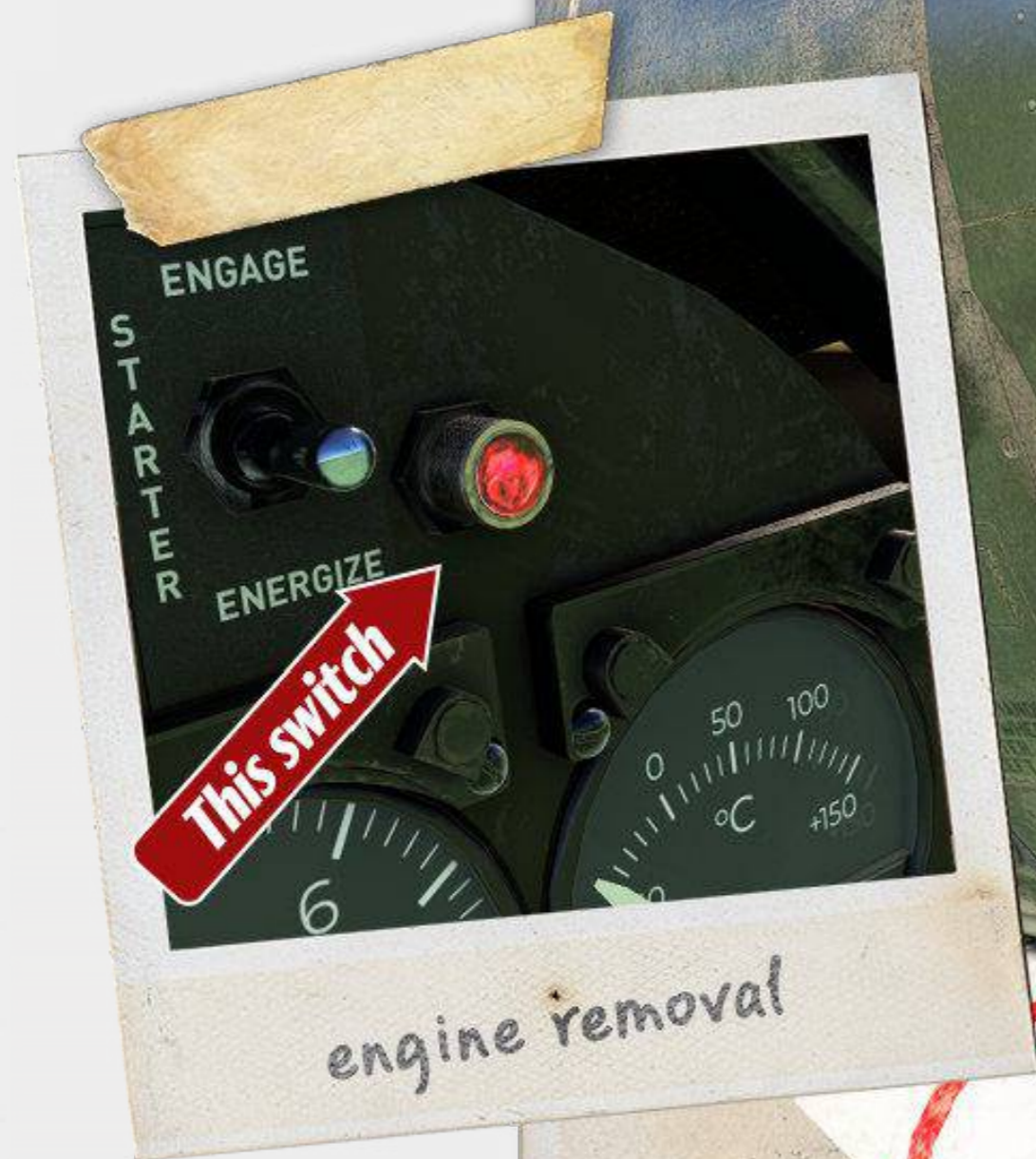
Please note : hiding the tanks does not remove the amount in the tanks. This means the armament cannot be loaded until you do this manually.

Features : Engine panels

This switch toggles the engine panels off the front of the aeroplane. It can only be done if the engine is not running (they automatically are installed again) and also not moving.

Ensure you have your parking brake as some airfields are on a slope!

This does not work in the air... Obviously.

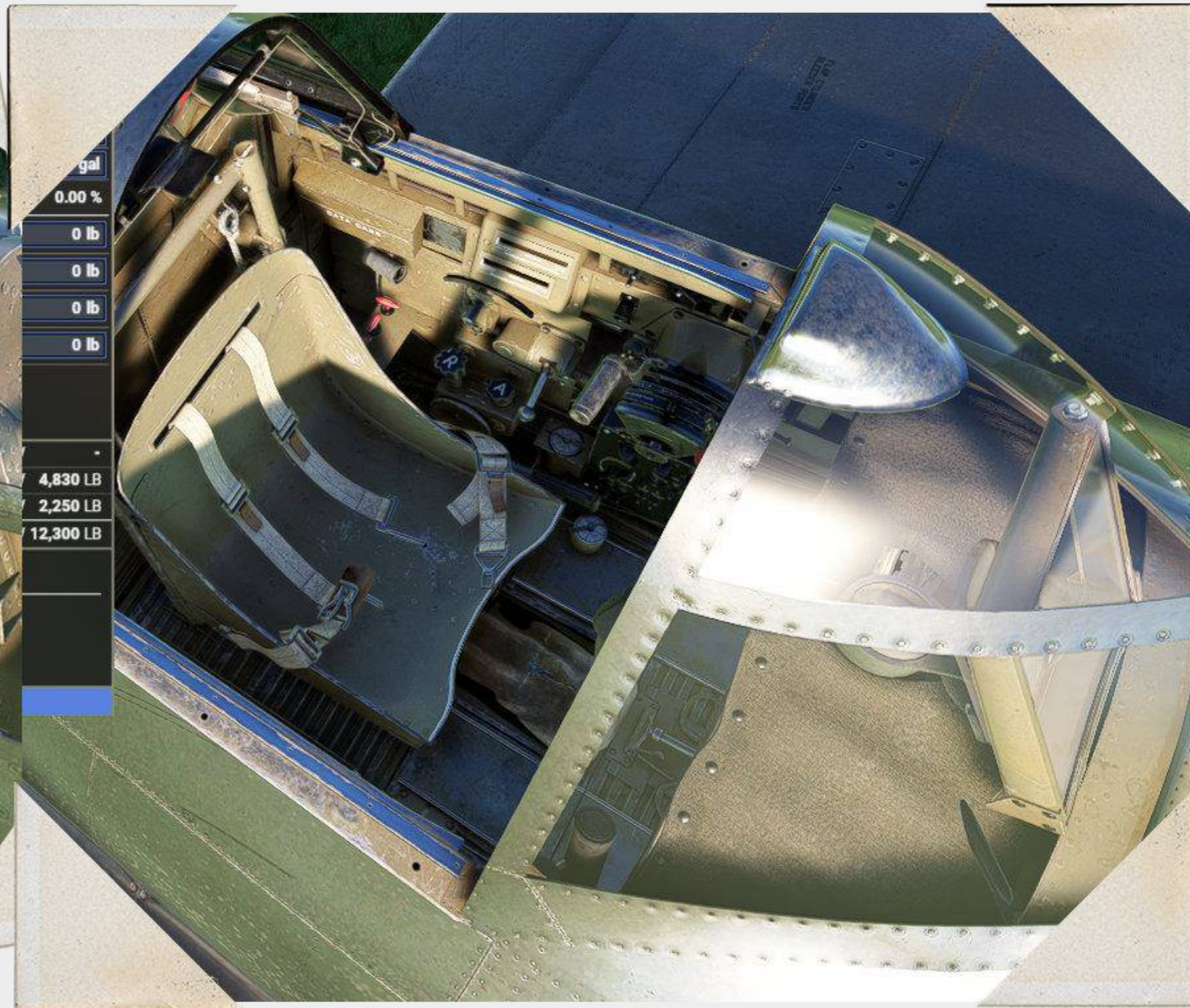


Features : Pilot removal



Did you know ?

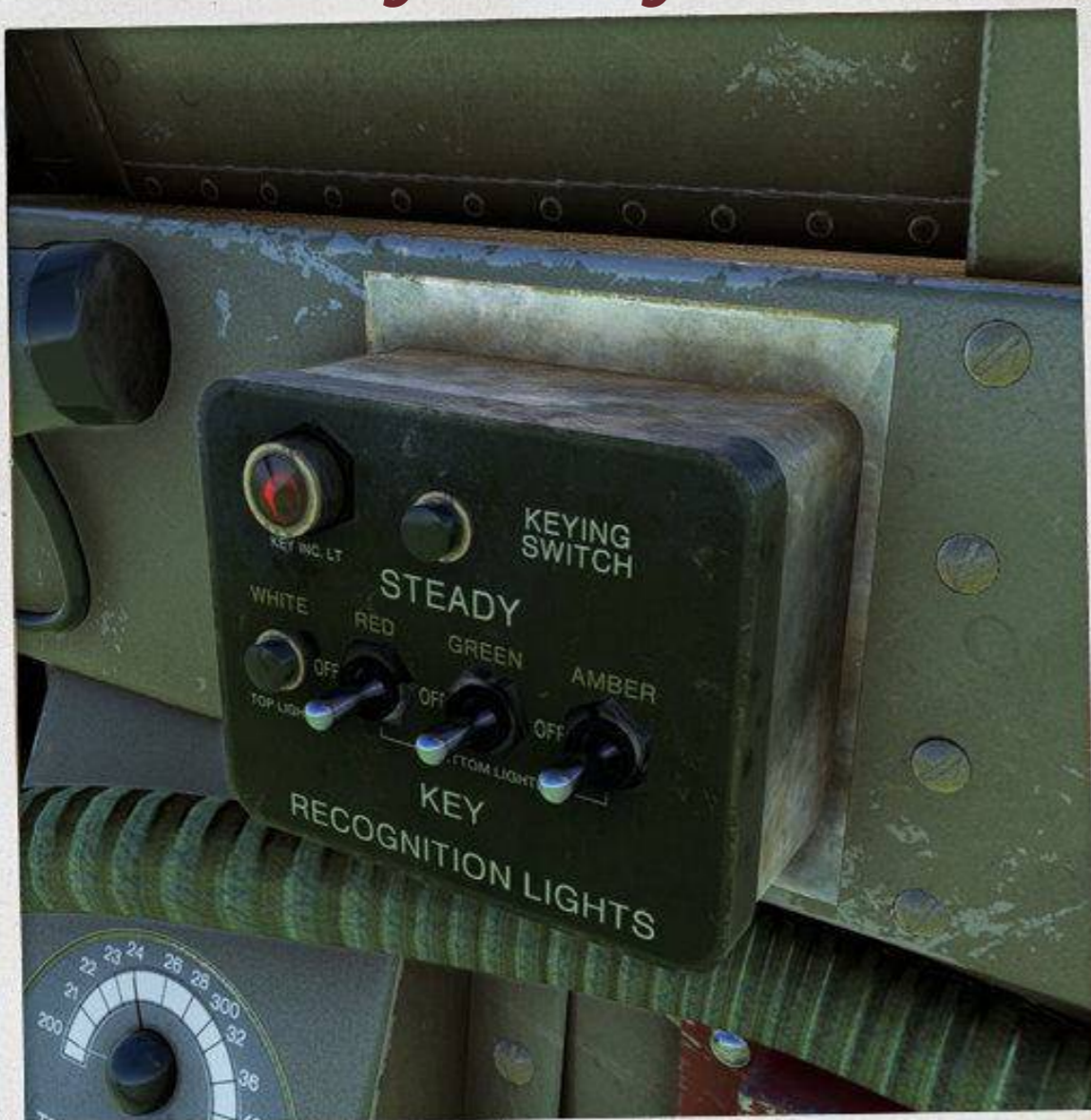
The AH pilot featured in this P-47 (and the P-51) is also the same pilot that features in the P47D bubbletop for FSX/P3d.



Setting the weight of the pilot in the weight screen of the game will remove the pilot. This works with both the WW2 era as well as the Asobo stock pilot.

We highly recommend that you put a pilot into the aircraft if you intend to fly the aircraft. It just makes sense

Features : Recognition lights



During mission briefings, P-47 Thunderbolt pilots were advised of the coded colour series for the day. This enabled the identification of either friendly or enemy aircraft by the correct coded colour transmission upon approach of other aircraft or returning to a home airfield.

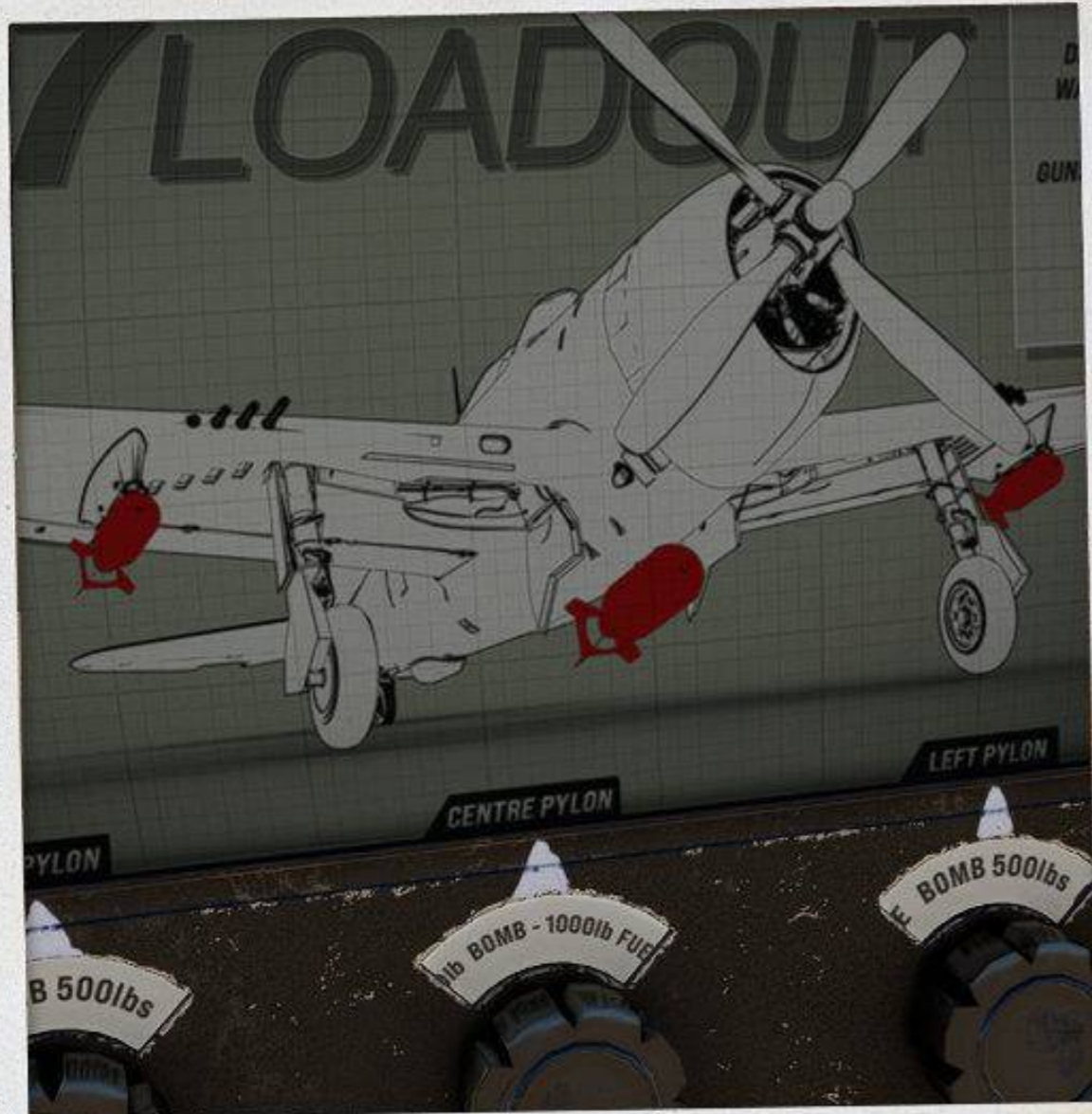
Here the order of the day was for a flashing Amber light and a steady green light with no Red light showing. Move the 3 way switches into the correct positions. And then either get the ground crew to confirm or hop out of the plane and do it yourself.

We all know you're going to hit the showcase button and take a drone out . Its ok.

And though this is a photo we managed to catch the amber in the on position as well as the green light on. Any combination is possible. And by default they are off should you wish not to use them at all.

The white top recognition light is not simulated.

Features : Armament



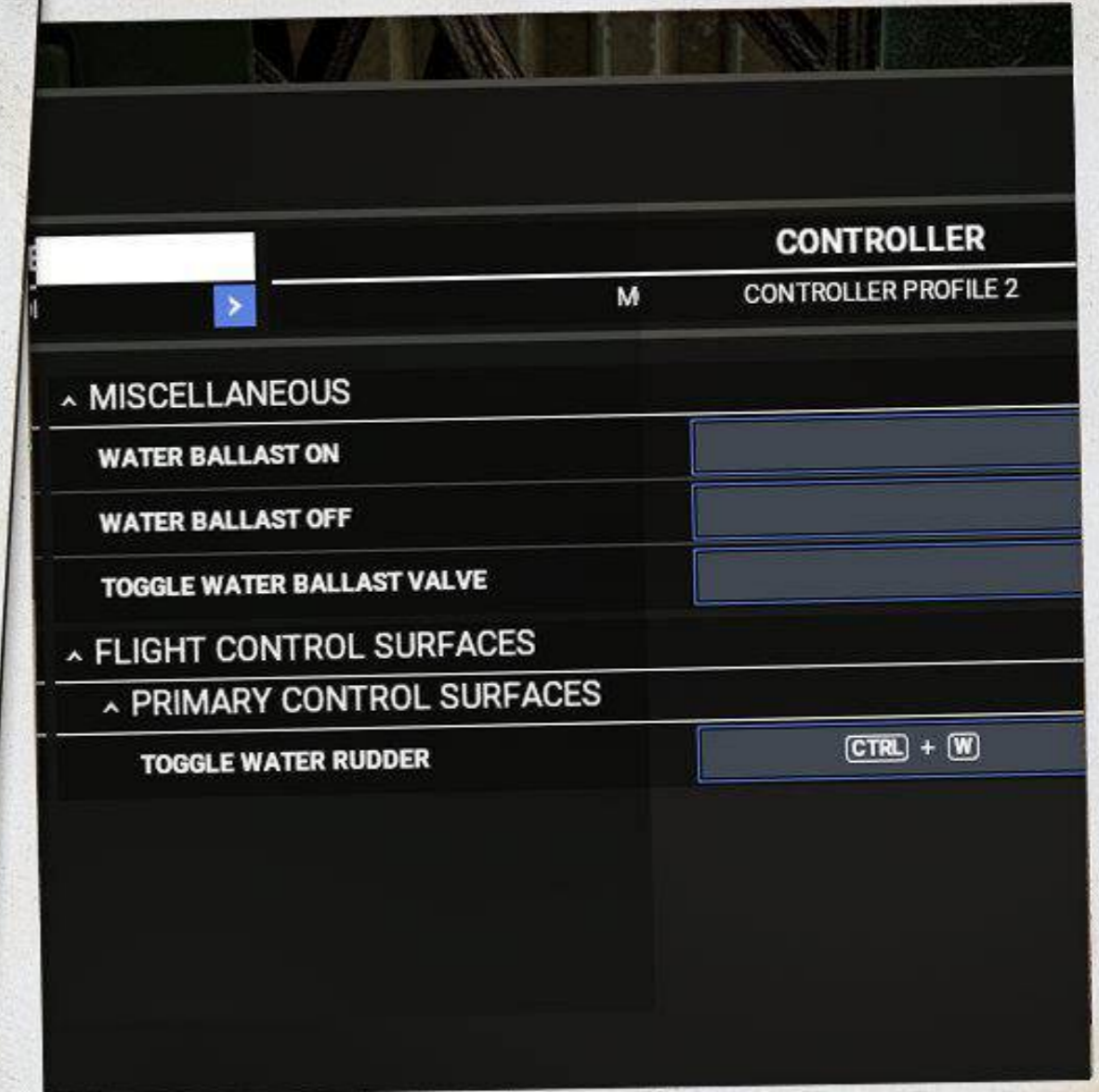
The P47-D is a formidable fighter. As such we have allowed for 500 lb bombs and 1000 lb bombs to be added via the options panel.

You will note that your fuel amount differs once an external tank is removed in favour of a bomb. Sort of makes sense!



Here the plane is ready for a bombing sortie. Please note your range is seriously hampered in this configuration.

Also note the Guns are firing as well. Not sure if this is a good idea ejecting hot shellcasings around bombs etc however.



Gun firing is done by the water rudder switch. We have mapped it to ctrl+W in this shot here. This allows you to fire it from the external views for some interesting screenshots. And also turn it off.

Therefore you dont have to use it.

You will hear the gun effects firing as well. Check out the developer runthrough of the features on youtube for what it should sound like.

Addendum - Limitations - tips - contact

Repaint tips.

The P-47 was modified in theatre of operations a lot. Should you wish to modify your paint the following options are available to you.

1. Use the factory bare metal fuselage as a base and then use the painted fuselage as a mask over the top for those sweet metal/painted hybrids.
2. The writing on the fuselage is handled by decals. Remove the ones that you dont wish to see or scruff up. On some of them the decals are reversed in colours.
3. There was some conjecture on the green that was used in the gear well and the engine bay we went with the less yellow green as compared to the P51 for a different feel.

Other tips.

1. You dont need a lot of power to take off.
2. Remember the rudder trim to counter the torque.
3. Dont fly with the options panel open. (Important)
4. Read this manual... Oh wait ;)
5. Have fun, it's what it's all about.

Limitations - Information.

1. The blower lever does not indicate the percentage that it is open
2. Using the dev mode airplane selector removes the effect from the gun effect. This might change in future game updates. 1.36.2.0 still an issue.
3. The supercharger is working as well as can be within the stock framework of the game. Should extra functionality be added to the game we will endeavour to better replicate the real thing. This functionality may also change over time.
4. The sounds have been made to strict Asobo recommendations found in the SDK document.
5. Dont fly with the options panel open it's logic will overwrite a number of functionalities . We said this alot. It must be important.
6. The flap lever works as closely as we could get within the stock framework of MSFS.
7. Check the aeroplane heaven P47 page for information about armament.

Contact

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Website : www.aeroplanehaven.com

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Yes the options screen did our heads in as well!

You just got to remember you are looking at the P-47 from the front.