F4U-1 Corsair™ 'Birdcage'

Operations Manual

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Please note that Flight Simulator X Steam Edition must be correctly installed on your PC prior to the installation and use of this Corsair simulation.

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INTRODUCTION

In 1938 the US Navy Bureau of Aeronautics issued a request for proposals for a ship-borne fighter aircraft. Vought-Sikorsky answered the call with a proposed design powered by a 2,000hp twin-row, 18-cylinder radial from Pratt & Whitney known as the 'Twin Wasp', one of the most powerful aero engines of the period.

Dubbed the XF4U-1, the prototype aircraft broke the world speed record for a single-engine fighter in level flight, posting a speed of 404 MPH. Only the new P-38 twin-engine fighter from Lockheed could get close.

The XF4U-1 incorporated many advanced design features such as spot welding and flush rivets for better streamlining and, of course, the now famous 'gull wing' shape, developed to enable an enormous three-blade, 13 foot 4 inch propeller to extract maximum power from the big radial.

Although it was not easy to build, the wing shape was extremely efficient aerodynamically and, with the wing folding ability added in production models, increased the versatility of the F4U during operations from small fields and off carriers.

In the first year of production, 1942, Vought produced 178 F4U-1s. These aircraft soon found their way to front line duty in the Pacific Theatre, immediately flying combat missions in 1943 with the US Marine Corps based on the islands. The first combat mission was carried out by VMF-124 on February 11th, 1943.

Many Marine Corps and Navy pilots were to reach ‘Ace’ status flying the Corsair in its various incarnations. Later models were equipped with better armament and the distinctive ‘bubble’ canopy which finally improved forward vision for carrier approaches.

The first Corsairs, like the one modelled here, carried the early multi-bar design of canopy which, together with a bulky forward screen frame, really made carrier work very difficult indeed. So much so that, due to other problems with wing stall, these early F4Us were withdrawn from carrier duty until the problems could be fixed. Also, the undercarriage, although very strong, was too stiff and resulted in ‘kangaroo hopping’ while touching down on a pitching deck.

In the end it was the British Royal Navy which tamed the Corsair when it took delivery of its F4U-1B version; it clipped the wings for better storage in cramped hangar decks and solved the wing stall problems.

With the addition of the new canopy and other refinements, the Corsair served with great distinction throughout the remainder of WWII and later in the Korean conflict. Corsairs in their final guises were employed by other international forces such as the French and Argentine navies, flying on into the 1950s and 1960s. Over time the airframe was developed to carry a wide array of armament and other equipment; bombs, rockets and even radar pods could be attached and the range extended with droppable fuel tanks.

The Pratt & Whitney ‘Twin Wasp’ was also continually developed and versions producing 3,000hp were used as air racers in the 1950s.

But let’s return to the roots of the ‘Bent Wing Bird’, the F4U-1.

Never easy to fly, the ‘Birdcage’ presented a challenge for both new and veteran pilots and could bite if not operated correctly. In this manual we will teach you as much as we can about the controls and equipment of your F4U-1, give advice on best practice for take-off, flight and landing and provide a few tips and tricks. Nothing, however, can take the place of actually flying the aeroplane and learning its idiosyncrasies. We can guarantee you will experience an exciting flight, whether it’s from a far-off field in the Pacific or from the deck of an aircraft carrier.

Included aircraft

RNZAF NZ5201, recently restored and resident in New Zealand

5A British Royal Navy F4U-1B with clipped wings

No. 18 ‘Bubbles’ of VMF-124, flown by Lt. Bill Crowe

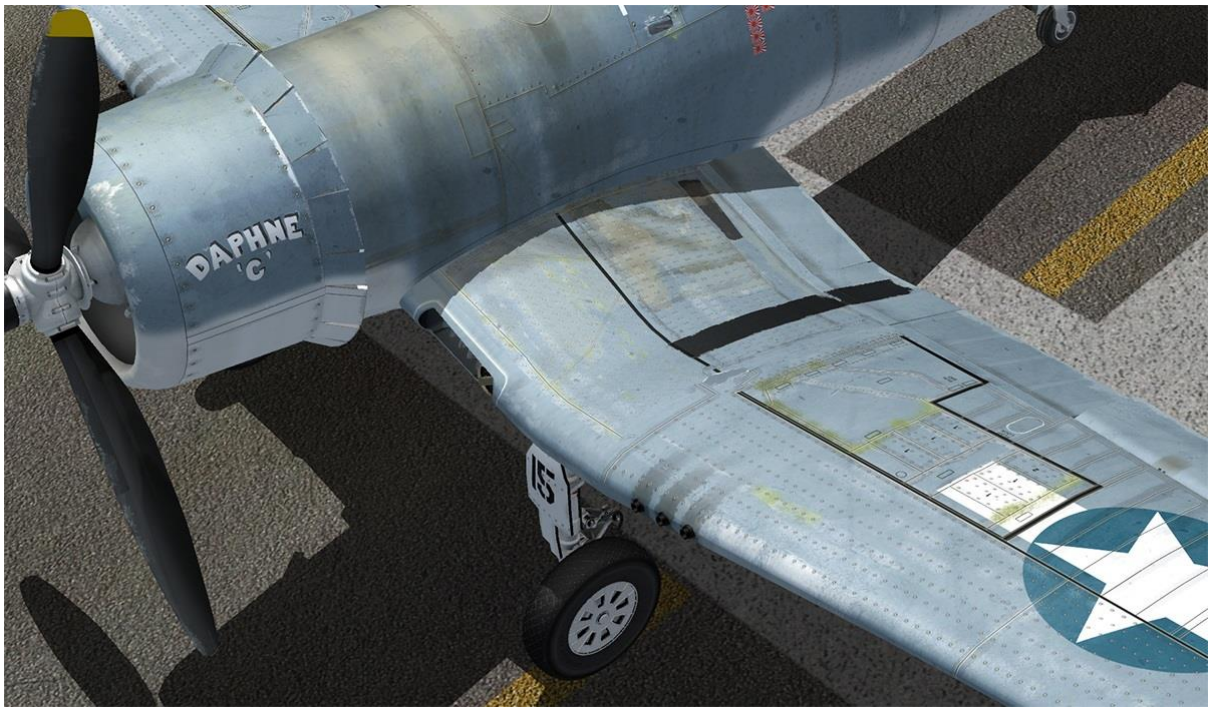
No. 576 ‘Marine’s Dream’, flown by Major Gordon of the ‘Flying Aces’ VMF-222, December 1943

17-F-13 in the tri-colour scheme as it appeared aboard the USS Bunker Hill with the US Navy VF-17 units in 1943

No. 15 'Daphne C', flown by Capt. James N. Cupp of VMF-213, Munda, September 1943

A note on texture finish

With this simulation we have tried to demonstrate just how hard a life these aeroplanes had in service. The ravages of salt air, mud and tropical rain took their toll on the airframes and continual sandblasting from the harsh coral sand could strip painted finishes back to bare metal in places. This is why you will find most of the liveries in this pack extremely weathered and war weary.



A Paint Kit is provided if you would like to create your own schemes, so if you require a factory finish, use that!

Aircraft specifications

Wingspan	41 ft (40 ft for the British clipped wing B model)
Wing area	314 sq ft
Length	33 ft 4 in
Height	16 ft 1 in
Empty weight	8,892lb (4,074kg)
Maximum take-off weight	12,656lb (5,740kg)
Power plant	Pratt & Whitney R2800 18-cylinder 'Twin-Wasp' radial, 2,000hp
Propeller	Hamilton Standard, fixed speed, variable pitch 13 ft 1 in diameter
Maximum speed	417 MPH @ 19,900 ft
Climb rate	3,870 feet per minute
Service ceiling	36,900 ft
Maximum range	1,015 miles
Tankage	237 US gallons – fuselage 2 x 62 US gallons – wing tanks 1 x optional drop tank of 175 US gallons
Armament	6 x .50 calibre machine guns 1 x 1,000lb US Standard Bomb

INSTALLATION, UPDATES AND SUPPORT

Installation is handled by Steam after purchase of the product. After purchasing the product the files will be downloaded and installation into the Scenery Library will be automatic.

Accessing the aircraft

To access the aircraft in FSX:SE

1. Click on 'Free Flight'
2. Select 'Just Flight' from the 'Publisher' drop-down menu
3. Select 'Chance Vought' from the Manufacturer drop-down and choose one of the Corsair variants

Tick the 'Show all variations' box to see all the available liveries

Updates

Updates to the product will automatically be deployed, downloaded and installed via Steam to all users who own the product.

Technical Support

To obtain technical support (in English) please visit the Customer Service [http://www.justflight.com/support] pages on the Just Flight website. As a Just Flight customer you can obtain free technical support for any Just Flight or Just Trains product.

For support specifically on the Steam version of the add-on please contact Dovetail Games. https://dovetailgames.kayako.com/

Regular News

To get the latest news about Just Flight products, sign up for our Newsletter [http:// http://www.justflight.com/newsletter] and regular emails.

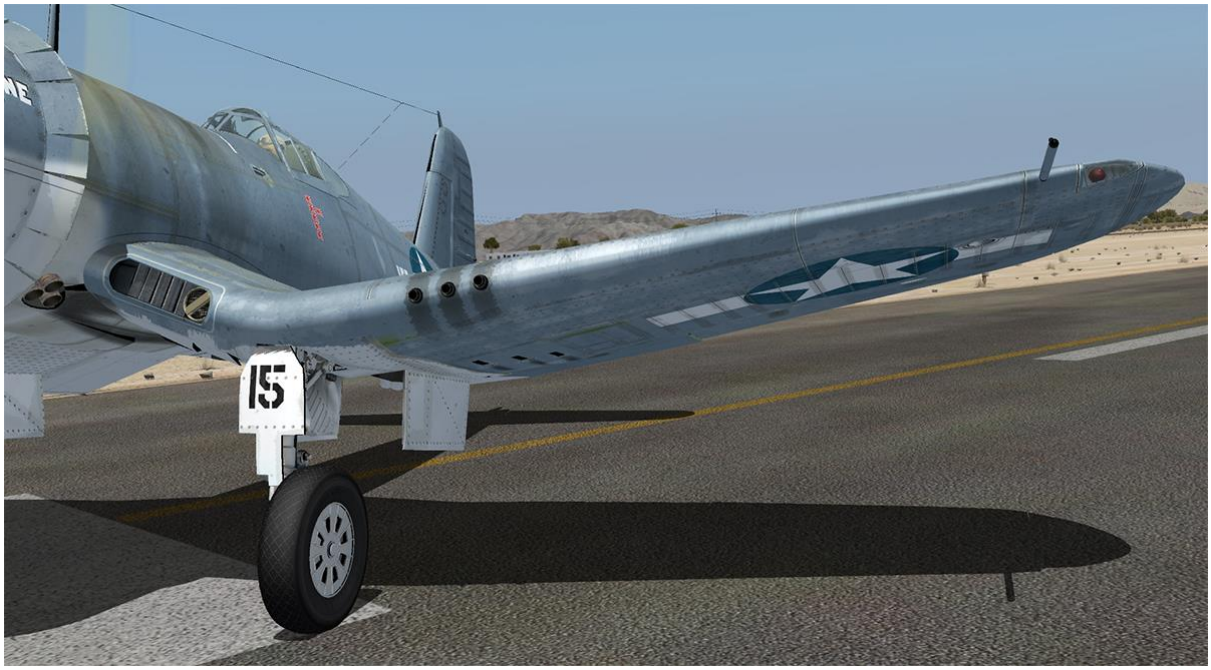
WALK-AROUND

The F4U-1 is a big aeroplane. Deceptively big, until you get in closer, and then it is just – big.

The 2,000hp Pratt & Whitney 'Twin Wasp' engine is housed in a VERY long nose (another nickname for the aeroplane was 'Hog Nose') and turns a massive three-blade propeller of the Hamilton constant-speed, variable-pitch type, measuring over 13 feet. Cowl flaps ring the cowling and the stubby exhausts protrude through ports in the lower panels of the nose section. The two topmost cowl flaps were eventually removed (by the British) to provide better forward vision. The top panels of the nose section carry the oil tank and the leading aerial mast for the communications antenna.

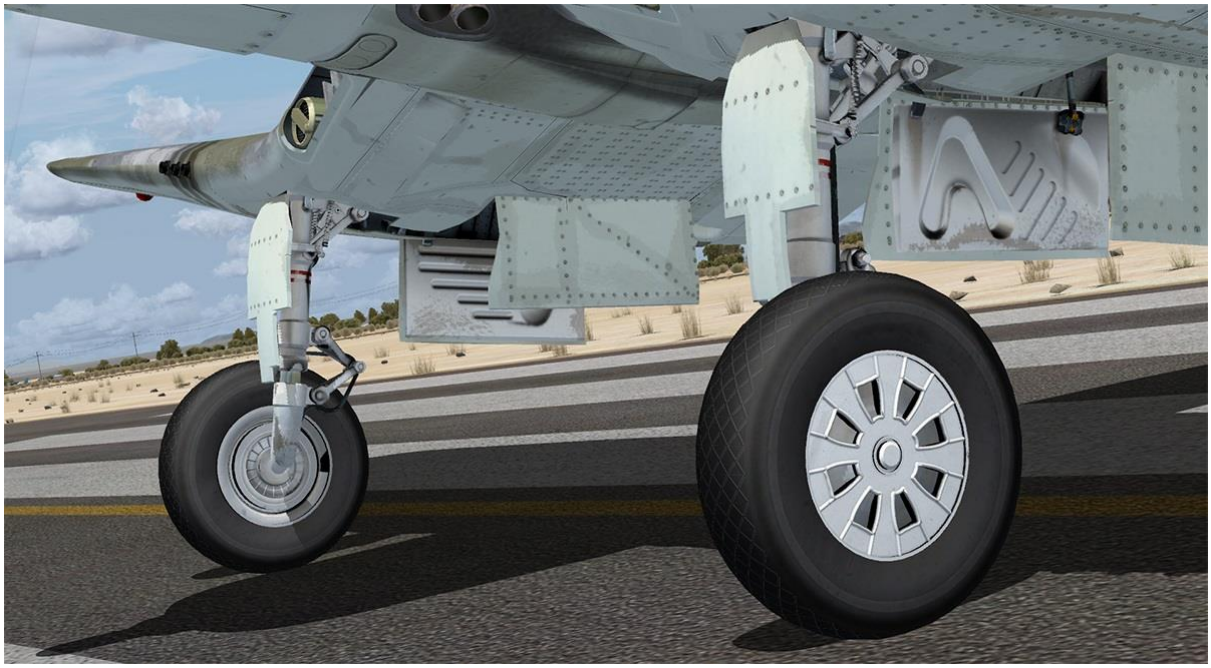
In order to use that enormous propeller, some way had to be found to give enough ground clearance, especially when the aircraft was level on the ground, without resorting to overly long and awkward undercarriage legs. Such legs would also make the cockpit impossibly high off the ground for quick entry and exit.

It was for this reason that the ingenious 'Gull Wing' was invented. If you look from the front of the aircraft you will see that landing gear of conventional height can be used, but because the 'W' of the wing rises at its centre, the nose of the aircraft can be lifted high enough that the propeller clears the ground. This wing was immensely strong and required no more than a straight 90-degree fitting to the fuselage with no fairings necessary. The wings are also very thick and both house a wing tank of 62 US gallons and three .50 calibre machine guns in each leading edge.



The wing root on each side carries the air intakes and filters in the leading edge, with oil coolers and doors in the lower section. Those air intakes used to whistle in the airstream, giving the Corsair one of its nicknames coined by the Japanese – 'Whistling Death'.

Advanced for its day, the centre section carries the entire undercarriage and operating systems behind completely faired doors, which greatly aids aerodynamics when the gear is up. The gear itself is quite a complex affair, requiring some clever geometry to twist the main oleos through 90 degrees so that the wheels lay flat when housed in the wells. The gear has to be very strong to survive the enormous impact loads of landing on a pitching aircraft carrier deck.



A novel feature of the undercarriage design was its ability to be used as an airbrake when diving, thus eliminating the need for separate dive brakes or spoilers. More on this later.

At the trailing edges is an impressive array of deep flaps of the slotted type, rotating down but also moving out to provide maximum lift/drag. Note the additional gap-filling section between the innermost and middle flaps when extended.

The F4U Corsairs carried an impressive collection of lighting. At each wingtip are the conventional running or navigation lights. Inboard of these are the blue formation lights on top of each wing which could flash signals as well as act as steady identification lights. Under the starboard outer wing are the red, green and amber recognition lights used to indicate the position of the aircraft in its unit. The port wing carries a retractable landing light in the corresponding position.

A large pitot lance projects from the leading edge of this wing and drives the instrumentation.

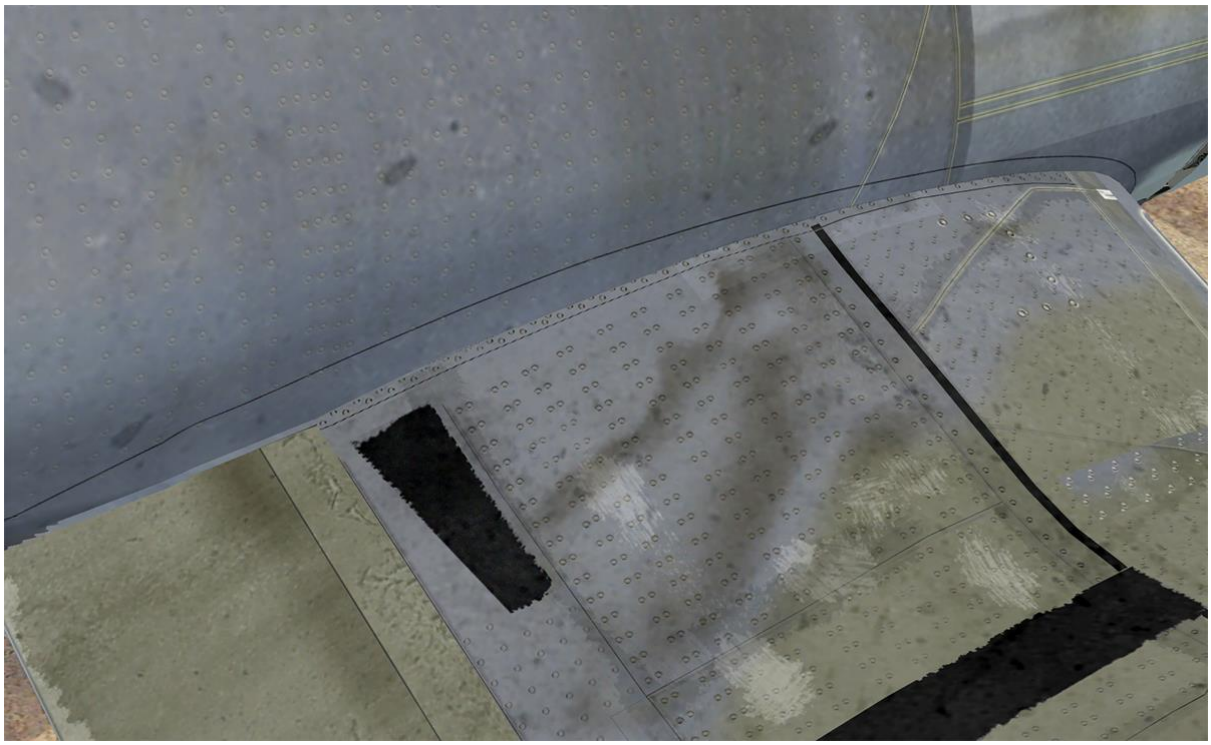
At the outer end of each wing is a large aileron fitted with a trimming tab. The starboard aileron is also fitted with a servo tab.

The centre section of the fuselage between the wing roots houses a large intercooler door for the supercharger and behind this a glazed viewing port is cut into the airframe to aid the pilot when making carrier landings. The long nose of the F4U-1 hindered forward vision and devices like this had to be installed to ease the burden on the pilot.

Through this port you can make out the complex structure of the tubular framework. The Corsair had no floor in the cockpit and the pilot was perched high up with his feet on special trays.

Just in front of all this, an extra, droppable fuel tank with a capacity of 175 US gallons could be carried on special lugs linked to controls in the cockpit. This feature is simulated. Also simulated is the ability to carry a 1,000lb bomb on a special rack; this was usually retro-fitted in the field for the early F4U-1. The multiple bombs and rocket launchers, extra machine guns and cannon came later with subsequent versions of the Corsair. It is important to remember that this first Corsair was designed for the rough and ready style of warfare first encountered in the Pacific – a 'no nonsense', rugged aircraft that would get you home in one piece.

The airframe was one of the first service aircraft to feature flush riveting in its construction and the builders took full advantage of the system, using multiple lines of rivets to strengthen important components without compromising aerodynamics.



The pilot entered the cockpit by stepping up onto the mid-flap surface (a walkway pad was usually provided) and then onto the top of the wing root. From there it was just a short climb up a special step in the fuselage side and into the large cockpit. You were now some 15 or more feet off the ground and master of all you surveyed!

Except for one thing…

In the early F4U-1 the canopy was designed for maximum strength and so multiple bars were used in its construction. It was also quite shallow so did not provide exceptional headroom. The windscreen framing was also of heavy duty construction and further hindered forward vision.

All of this was eliminated, of course, when the new ‘bubble’ canopy arrived in the F4U-1A model. A new thinner frame was used for the screens and the excellent main canopy afforded superb all-round vision.

In the F4U-1 ‘Birdcage’, however, we must resort to raising the seat and putting our head out of the side for landing approaches, taxiing and so on. The large gunsight with its double glass reticules also impedes forward vision.

The canopy retracted fully on tracks to offer excellent access to the cockpit. In this simulation we provide a special Configuration panel which allows for removal of the pilot when the aircraft is on the ground, enabling inspection of the detailed cockpit. This Configuration panel also lets you adjust your seat height and viewpoint, and load the extra tank or the 1,000lb bomb, both of which can be dropped. A firing effect is provided for the guns, which can be toggled using the ‘Smoke system (on/off)’ keyboard assignment.

The most important feature of these aircraft was their ability to fold the outer wing panels up and inwards toward the fuselage. This dramatically reduced the footprint of the Corsair for stowage in cramped, below-deck hangars and, of course, allowed more aircraft to be on the flight line. Wartime movies often show rows of Corsairs two abreast, with their engines running and wings folded, waiting for launch from the carrier. Significantly large formations could be carried and launched from a carrier this way, which would be impossible with conventional fixed-wing aircraft.

But we are getting ahead of ourselves again here. The 'Birdcage' was not a great performer when it came to carrier duties due to several design inefficiencies, which were eventually solved by the British in the F4U-1B.

The Royal Navy had the wings clipped to clear the deck-head in their carriers and also adjusted the wing stall characteristics to make carrier landings easier. They also invented the ‘curved’ approach method to improve pilot awareness and vision when lining up for a Carrier landings There’s more on this later.

and you will find a clipped-wing B model has been included in this simulation.

Immediately aft of the canopy, the fuselage is concaved in an attempt to give the pilot some sort of over-the-shoulder vision. This was not too effective in combat and resulted in the canopy having a large top bulge added to accommodate a bigger rear-view mirror.

Moving aft, note the large tail which gave the F4U such great manoeuvrability and turning ability for such a large aeroplane; this was essential against the nimble Japanese Zeros which it had to face.

Beneath the tail is the tail hook for carrier landings. Every effort was made to give the F4U the best aerodynamics possible so even the hook itself is recessed into the fuselage and its shaft operates with the tail gear mechanism to retract behind a long door when not in use.

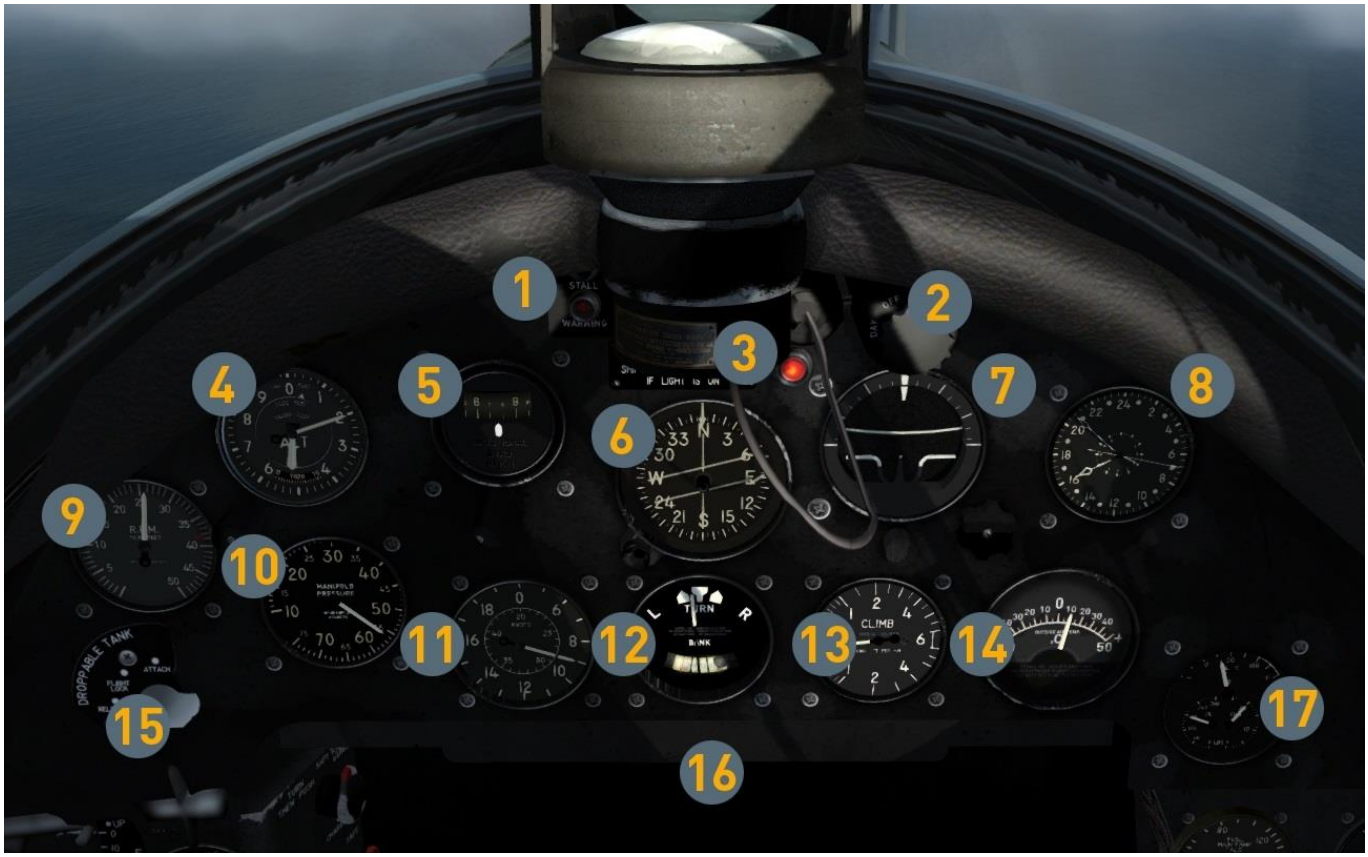
A tail wheel with a choice of pneumatic or solid tyre was offered, depending on use.

It's now time to take that climb up into the cockpit to explore your new 'office'.

PANEL GUIDE

There are well over 70 instruments, switches and controls in the F4U-1 cockpit. It is important that you study the following illustrations and familiarise yourself with the location and function of each of them.

Main panel

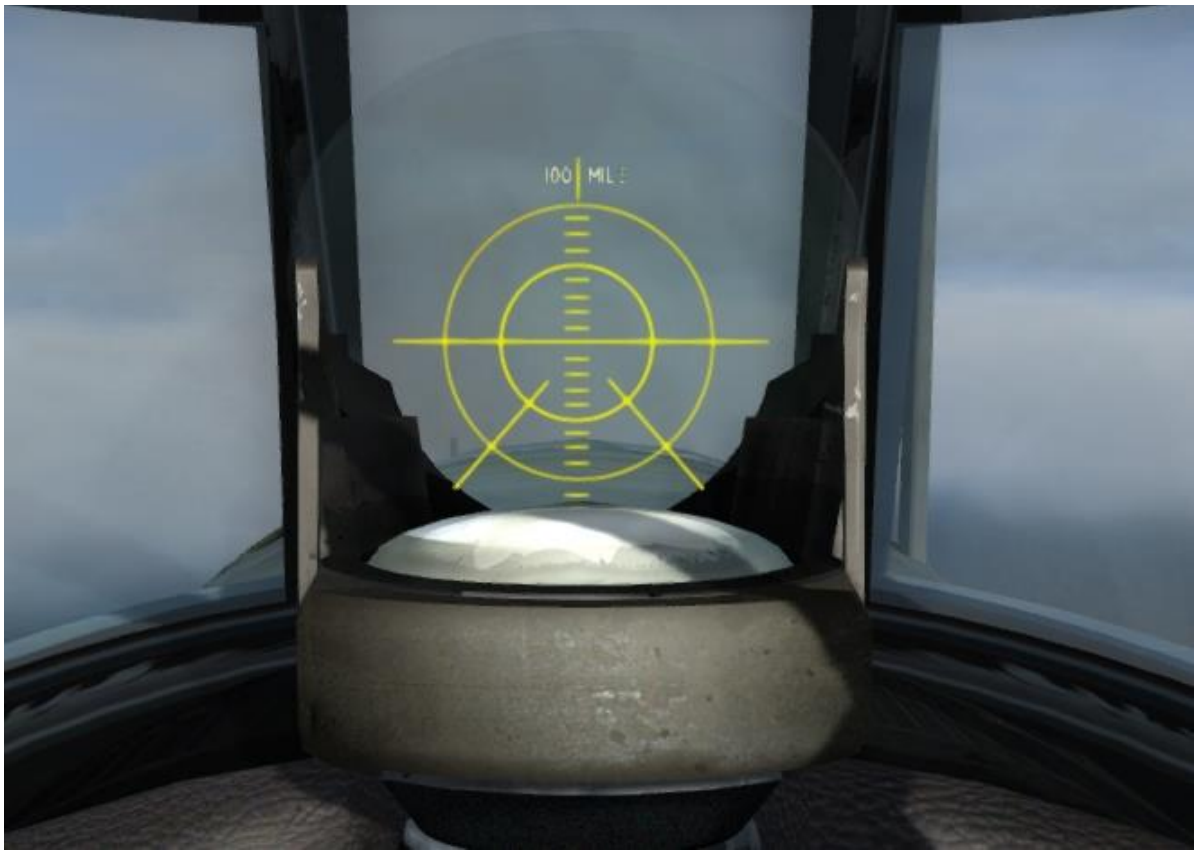


1. Stall warning light

The F4U-1 clean-stalls at around 80 knots. This light will illuminate just before entering the stall. Stall recovery should be carried out promptly.

2. Gun sight reticule switch

The gun sight reticule can be turned on and off using this rotary control.



3. Carburettor temperature warning light

This light will illuminate to warn of high carburettor air temperature. In the event of the light illuminating you need to move the supercharger control to the LOW blower position. If the light is still illuminated, open the intercooler flaps fully.

4. Altimeter

5. Gyro direction

6. Compass

The large open-ended arrow indicates the aircraft's current heading. The small heading reference needle can be rotated using the heading knob located beneath the gauge.

7. Artificial Horizon Indicator

The wing bars can be adjusted up/down using the knob located beneath the gauge.

8. 24-hour clock

9. Tachometer (RPM)

10. Manifold pressure gauge (inHg)

11. Airspeed Indicator (knots)

12. Turn/slip gauge

13. VSI (Vertical Speed Indicator)

14. Outside Air Temperature gauge (°C)

15. Drop tank control

This control has no effect on the drop tank as the drop tank is controlled from the 2D Configuration panel.

16. Pull-out chart table

Click on the edge of the table and it will slide out. Click on the table again to slide it back in.

17. Engine gauge

Displays cylinder head temperature and oil and fuel pressure.

Left side panel

18. Flaps control and indicator

The flaps have five positions, from 10 to 50 degrees down. Click and drag on the flap control to move it up or down. The flaps are large in size and produce a great deal of lift/drag. Use the flaps with caution and always keep an eye on airspeed to avoid a stall, especially on final approach.

19. Magnetos control

20. Landing gear indicators

21. Master ignition switch

Right side panel

22. Main tank contents

The F4U-1 has a central fuselage-mounted tank with a 50-gallon standpipe running through the middle, acting as a reserve which is selectable using the fuel selector control **(64)**. There are smaller tanks in each wing and provision is made for carrying a drop tank, which is centrally mounted beneath the fuselage.

23. Hydraulic pressure gauge

24. Voltmeter

25. Cowl flaps lever

When pushed forward, this lever will open the ring of cowl flaps on the engine cowling. There is no indicator as you can easily see them open and close from the forward view.

26. Oil cooler door lever

27. Intercooler door lever

Both of these levers are operated by pushing them forward (left-click) to open the doors and pulling them backwards (right-click) to close the doors. The levers are spring-loaded and will return to the centre position when you release them.

28. Door position indicators

Two indicators show the position of the oil cooler and intercooler doors on a scale from fully open to closed.

29. Nav and Comms radios

In this simulation we have added two simple radio units in this position – one for Comms (COM1) and one for navigation purposes (NAV1).

30. Recognition light switches

N. Optional navigation equipment (see the following page)

Optional navigation equipment

For those of you who enjoy the process of navigation, and to take advantage of the features in the simulator, we have added some basic navigation instruments and radios to allow you to capture radials for NAV1 and ADF (NDB) signals.

You can toggle on the additional navigation instruments and a basic ADF receiver by using the unlabelled switch **(N)** on the right side console. There is a VOR/ADF indicator (**N3**) and a beam localiser (**N2**) for ILS operations. You will be able to carry out most basic IFR navigation procedures by using a combination of the NAV radio (**29**) and the ADF radio (**N1**) tuned to available frequencies.

The optional equipment panel is attached to the chart board and travels with it when you pull out the board.

Right console

32. Landing light extend/retract switch

33. Landing light power switch

34. Guarded starter switch

35. Engine primer switch

36. Fuel pump switch

37. Master battery switch

38. Section light switch

39. Section light brightness switch

40. Formation light switches

41. Formation light brightness switches

42. Right-hand panel lights switch

43. Left-hand panel lights switch

44. Chart board panel light switch

45. Cockpit lights switch

46. Right-hand instrument panel light switch

47. Left-hand instrument panel light switch

48. Windshield defroster switch

49. Pitot heater switch

50. Instrument (avionics master) switch

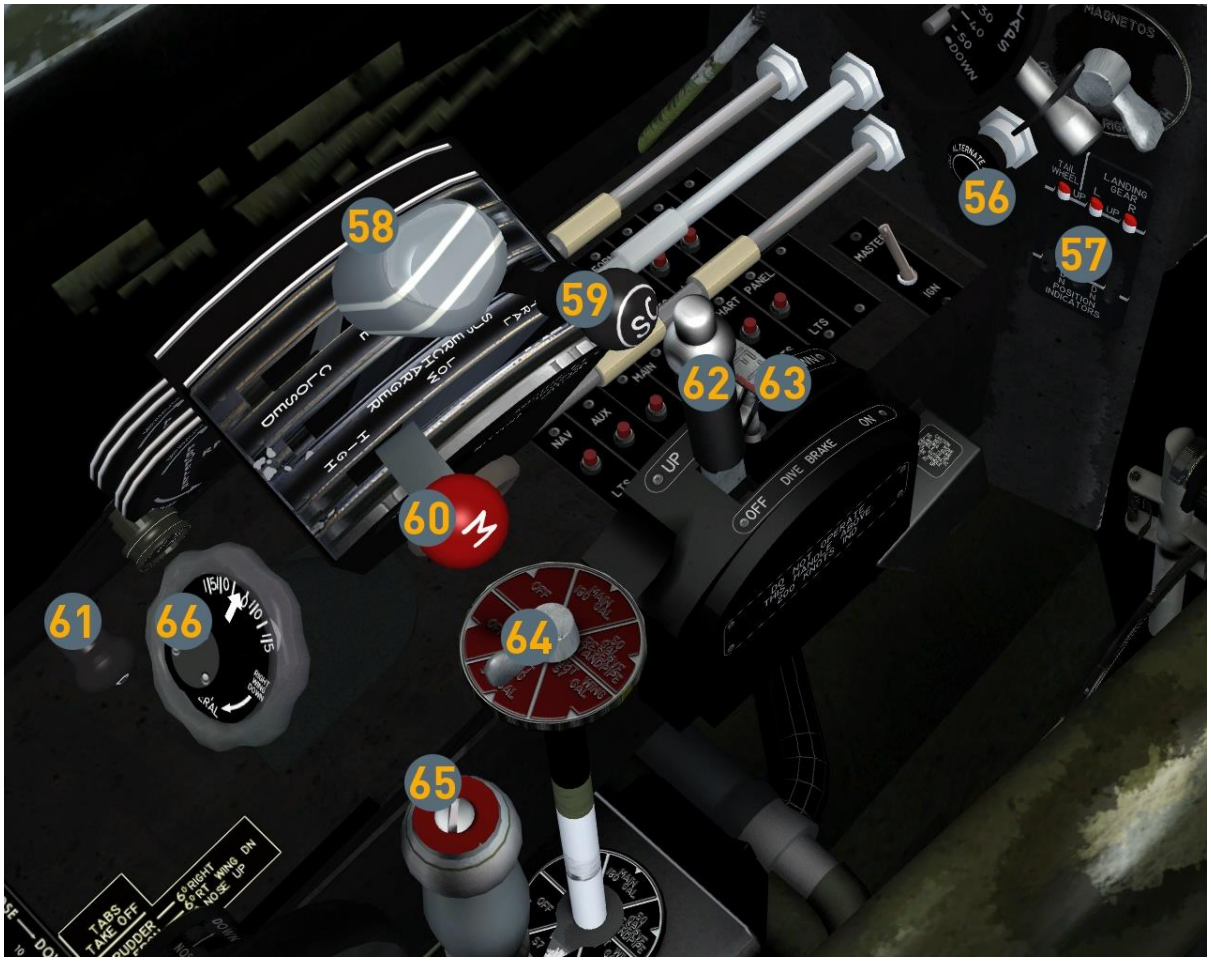
51. Electrical ground power switch

52. Circuit warning lights

53. Cockpit torch

54. Arrestor hook control

Left console



56. Carburettor heat control

57. Landing gear position indicators

58. Throttle lever

59. Supercharger control lever

The lever has three positions: high and low blower and neutral.

60. Mixture control lever

61. Propeller control lever

62. Landing gear lever

Click and drag the lever forwards to extend the landing gear or backwards to retract the landing gear. With the lever in the UP (retracted) position, left-click on the 'LIFT' handle to move the lever across to the dive brake position.

63. Dive brake control

With the lever in the dive brake position, click and drag the lever forwards to extend the dive brake or backwards to retract the dive brake. The dive brake consists of the main landing gear, which will be extended while the tail wheel remains retracted. The drag created by the main landing gear helps to slow the aircraft. With the lever in the OFF (retracted) position, left-click on the ‘LIFT’ handle to move the lever across to the landing gear position.

64. Fuel tank selector

65. Emergency landing gear handle

66. Aileron trim control

Left console rear

67. Cockpit torch

68. Rudder trim control

69. Elevator trim control

70. Emergency tank/bomb release

71. Tail wheel lock

72. Wing fold control

73. Wing fold lock

Configuration panel

The special Configuration panel that comes with this F4U-1 simulation can be toggled on/off by pressing **[Shift]+[1]** on your keyboard.

The panel has options for:

- Removing the pilot when the aircraft is on the ground
- Adding a drop tank
- Adding a 1,000lb bomb
- Seat height adjustment
- Viewpoint adjustment

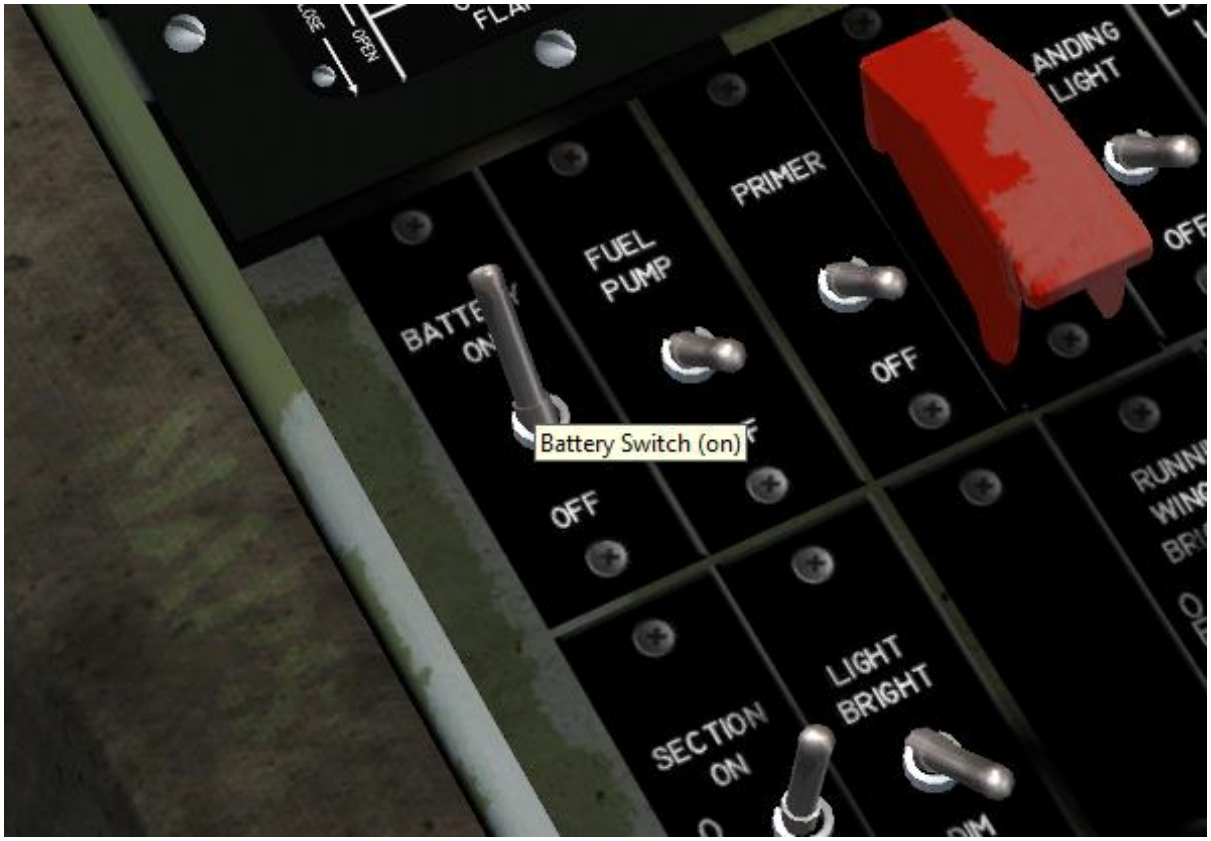
FLYING THE F4U-1 'BIRDCAGE'

You will find the aircraft a challenge to fly. This is an important and deliberate intention to simulate as closely as possible the challenges that faced the early Corsair pilots. If you follow the checklists and read this flying guide, however, you should quickly come to know the substantial performance and capabilities of this extraordinary aeroplane.

The following flight guide will take you on a check flight and get you back safely on the ground. We will talk about carriers later but for now we will concentrate on field operation.

The early F4U had a cartridge start system. The crewman would insert a large cartridge, like an oversized shotgun cartridge, into the breach of the starter unit, mounted beneath a nose panel. Assume that this has been done.

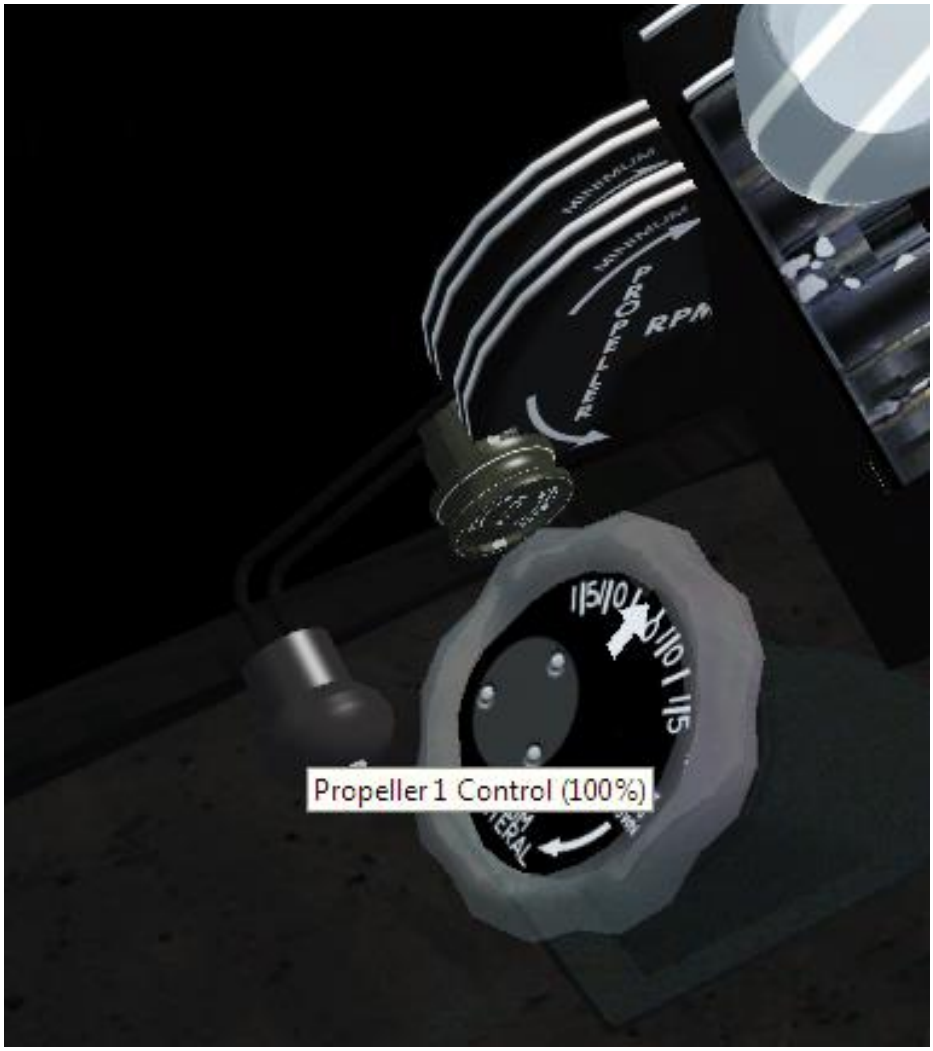
Switch ON the battery.



Open the cowl flaps with the lever on the forward right-side console. There is no indicator as you can easily see them from the cockpit.

Push the alternate air control (carburettor heat control) knob IN.

Move the propeller control lever down to low pitch, high RPM.



Move the blower (supercharger) control forward to NEUTRAL and move the mixture control to the AUTOMATIC RICH position.

Switch the fuel selector to the reserve standpipe position and switch on the fuel pump before checking that the fuel pressure is approximately 17lb.

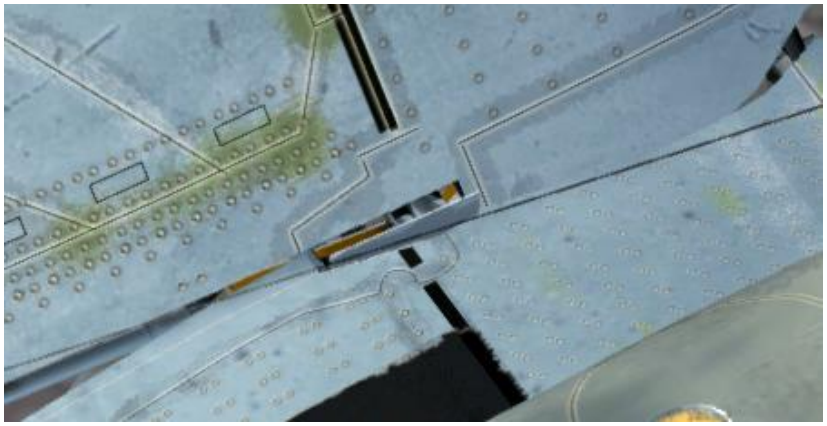
Turn on the ignition master switch and move the magneto control to BOTH.

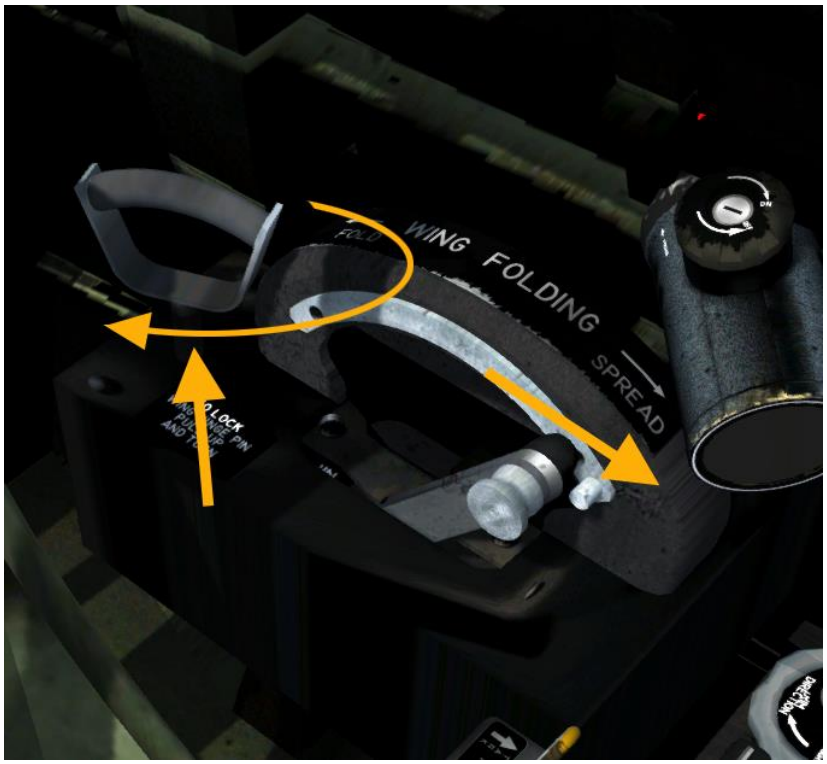
Operate the engine primer switch four times, then lift the red switch cover on the engine starter and operate the starter switch until the engine fires. You need to hold the starter switch ON until the engine runs. Release the switch and close the cover.

Idle the engine at 750 RPM.

If your wings are folded, use the wing fold control on the aft left-side console to spread them.

Once the small wing fold indicator doors in each wing fold joint are closed flush with the surface, lock the folding pins using the lever adjacent to the wing fold quadrant.





Pull the lever up and twist it clockwise to lock the pins.

The wings cannot be folded again unless you release the lock.

You will notice that the bracing/stability struts attaching the folded wings to the fuselage will disappear when the wings spread.

Release the parking brake and you are ready to taxi.

The big radial needs very little encouragement to start developing its power, so steady on the gas! Open the throttle slowly to get moving and make sure your tail wheel lock is OFF.

You will need to weave in an ‘S’ pattern while taxiing to see where you are going.

If you don't release the tail wheel lock, you will end up dragging that poor tyre around behind you.

Once lined up, lock the tail wheel again and close the throttle to idle.

Go through your pre-take-off checklist:

Wings	**FULLY DOWN AND LOCKED ('D' handle UP)**
Tail hook	**UP**
Fuel tank	**RESERVE**
Mixture	**AUTOMATIC RICH**
Blower	**NEUTRAL**
Propeller control	**FULLY DOWN, MAXIMUM RPM**
Cowl flaps	**TWO THIRDS OPEN**
Intercooler	**CLOSED**
Oil coolers	**OPEN**
Rudder trim	**6 DEGREES RIGHT** (this will help counter the massive torque effect of the big radial on full power, which will try to turn the aircraft to the left)
Aileron trim	**6 DEGREES RIGHT WING DOWN**

Elevator trim	**1 DEGREE NOSE UP**
Carb air control	**IN**
Flaps	**UP (for conventional field take-off)**

Use flaps for carrier take-offs at 20-30 degrees (half flap).

Pressures/temperatures	**CHECKED**
Throttle	**Open the throttle to give approx. 30" of manifold pressure**
Magnetos	**CHECK**

Push the throttle forward gradually. The aeroplane should fly itself off the deck at 45" of mercury and 2,700 RPM but you can go to 53.5" if needed.

Raise the gear in positive climb at 110-120 kts.

The F4U-1 will climb on full military power at around 3,000 feet per minute. After five minutes maximum at this setting, throttle back to 43.5 inches at 2,550 RPM with the blower in neutral and the mixture set to automatic-rich. Now your rate of climb will be around 2,000 feet per minute at 125 kts.

To maintain this climb performance, at around 8,000ft you must reduce throttle by 3-4 inches of mercury, open the intercooler doors and shift the blower into LOW.

Increase throttle to 47.5 inches. She'll be happy on this setting up to 13,500ft.

As you go higher, throttle back and shift the blower to HIGH. Then throttle to 48 inches.

Keep your intercooler door at least half open to maintain intake temperatures at a safe limit.

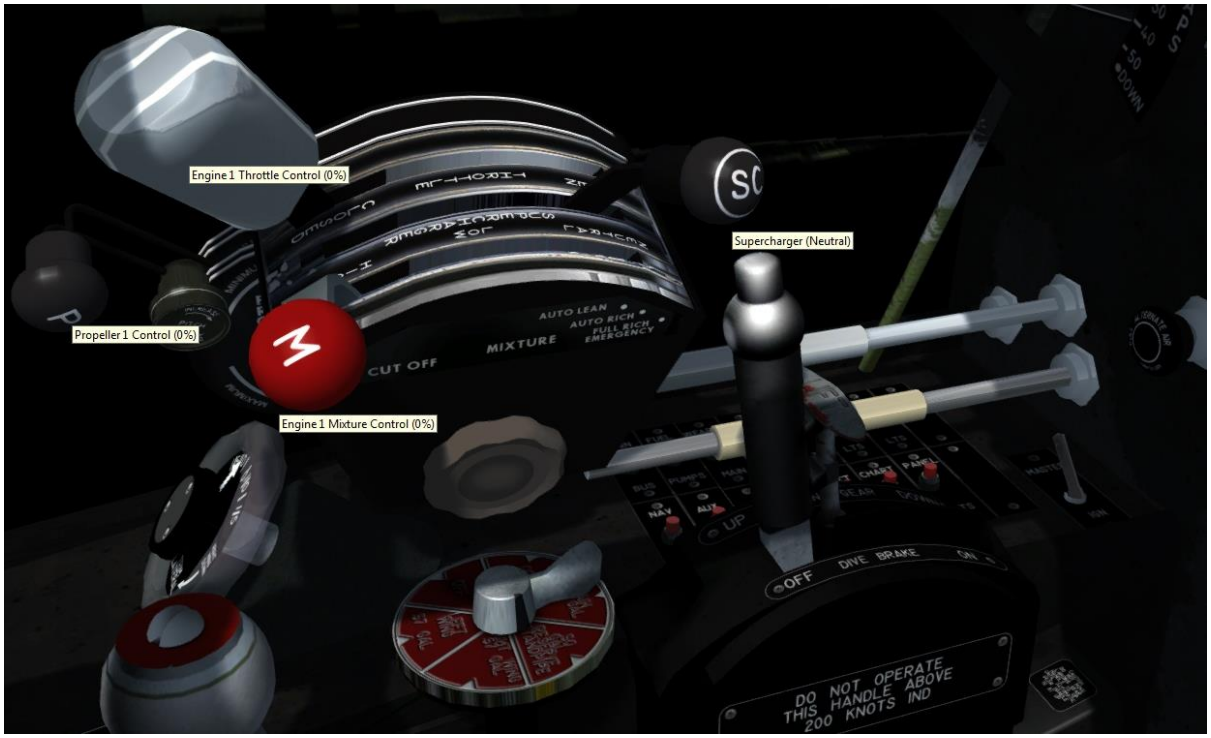
A carburettor air temperature light will illuminate if the temperatures are too high. If this is the case, throttle back and open the intercooler flaps fully and shift to a LOW blower setting.

Try to maintain around 135 kts in a climb to altitude.

Check that the oil temperature does not exceed 95 degrees.

Note: *Using the supercharger, mixture and intercooler controls will ensure optimum fuel economy and best power.*

Your F4U-1 is fitted with a two-stage 'blower'-type supercharger. It must be used effectively to extract the best performance from your aircraft and to maintain the health of the engine. The following guide will help you understand how it works and when to use it.



Continuous military power will burn fuel at a rate of 275 gallons per hour, so charging around the sky at full throttle will soon empty your tanks. You won't want that over a large ocean like the Pacific! Also, the more power you pile on, the hotter things get, especially in the tropical air. You must therefore use a combination of power settings and supercharger settings to achieve what you want without stressing the engine.

Let's look at temperatures first.

The more power you apply, the hotter the engine gets. Your oil temperature should be maintained at around 90 degrees. If it goes over this, you will get overheated air entering the carburettor and heating the fuel, which is not good. Unfortunately, as you climb higher with a conventional reciprocating engine like that big radial in front of you, you must lean off the mixture to maintain an efficient fuel/air ratio. The air gets thinner the higher you go. One disadvantage of a lean mixture is that it makes things run hotter.

This is where the blower comes in. By using forced induction air, you can maintain an efficient fuel/air ratio by increasing the density of air entering the engine without needing to lean off the mixture as much, giving you more power at altitude or in a climb, for example. **BUT** oil temperature will still rise with the increased energy of the engine, so we use an intercooler to cool it all down. This special cooler radiator lives beneath a retractable panel in the belly of the aircraft and can be opened to the

airstream by using the lever in the cockpit. If you have a high oil temperature (above 90 degrees), try pushing the intercooler lever forward a few strokes and watch the temperature drop. It all sounds rather confusing but it really isn't that difficult to learn.

High blower is used at maximum throttle to give maximum power in a climb or for speed to get out of trouble, but watch the temperatures. If the carburettor air light comes on, switch to LOW blower and ease off the throttle, opening the intercooler a little too. Things will return to normal pretty quickly.

You'll get the idea that for most purposes you use LOW blower and control the power with throttle to balance the manifold pressure. Use the mixture control as you climb.

The following are examples of settings taken from the official US Navy training manuals from when the F4U-1 was first introduced.

Maximum cruise power setting

- Mixture: AUTO-LEAN
- 2,330 RPM and 32 inches
- Blower: NEUTRAL

At these settings you should burn around 100 gallons per hour.

Recommended cruise power setting

- Mixture: AUTO-LEAN
- 2,150 RPM and 29 inches
- Blower: AS REQUIRED

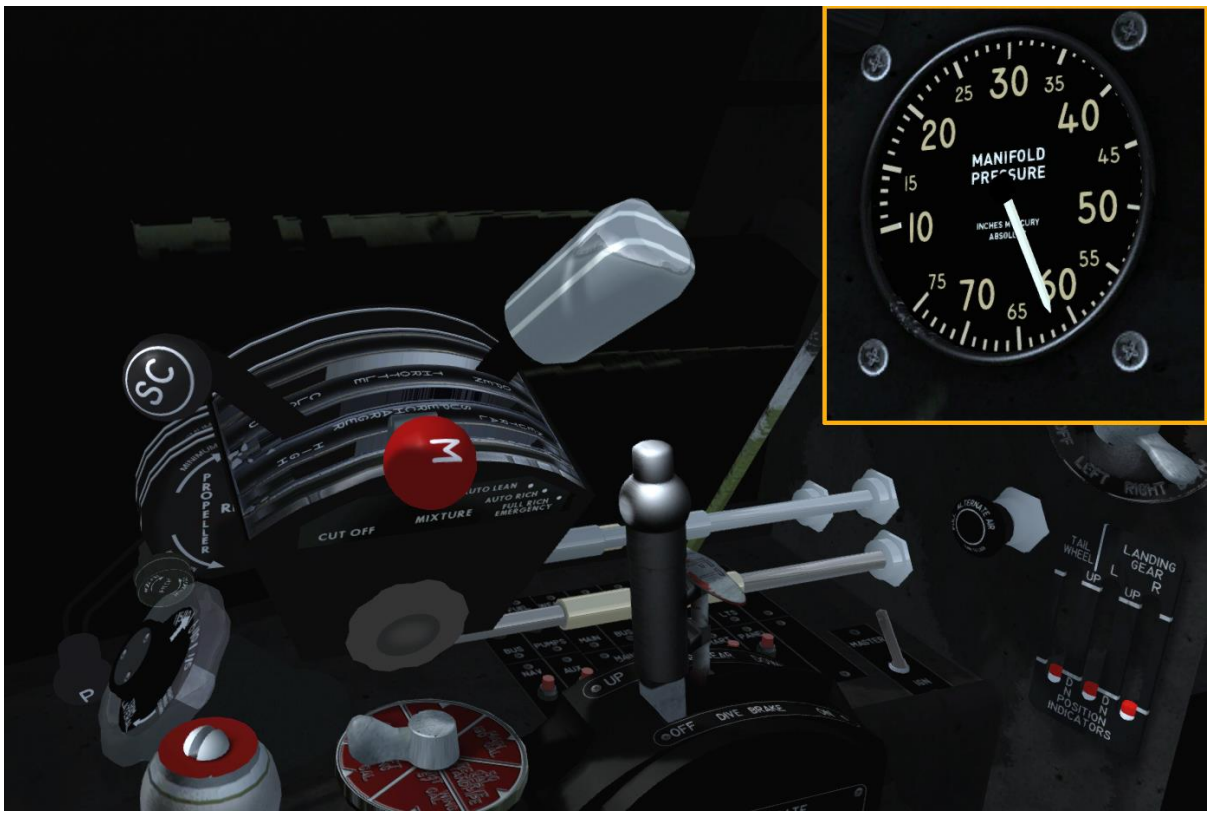
At these settings you should burn around 80 gallons per hour.

You can lower consumption to around 45 gallons per hour by reducing to 1,350 RPM and 29 inches.

As a general rule, use your wing tanks first, starting with the left; that's the wing that drops in a stall, so the lighter the better.

Don't forget to use the blower/supercharger or be reluctant to do so! It's there to extract every ounce of that 2,000 horsepower in front of you.

Power climbing in HIGH BLOWER (watch those temperatures!)



Stall speeds

Stalls are quite abrupt and are signalled by a sudden drop in the left wing.

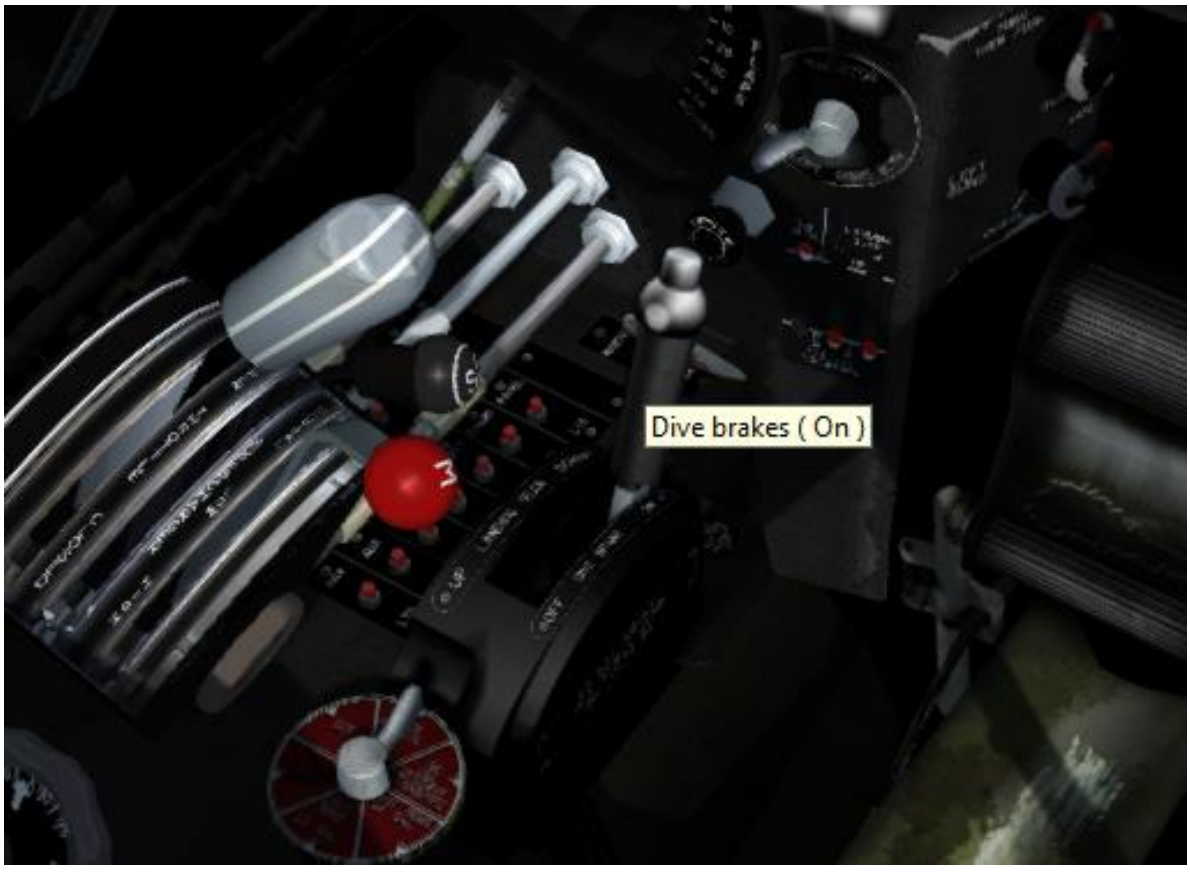
Gear down, flaps 20-30	77 kts
Clean	85 kts

Diving

Canopy	Shut
Mixture	AUTO-RICH
Throttle	Just open
Fuel selector	RESERVE
ALL cooler flaps	CLOSED

Use the DIVE BRAKE CONTROL to lower just the main gear.


Pull up for dive brakes (Gear)


Dive brakes (On)

Push over and watch your speed.

Tight turns

Flaps can be lowered to 25 degrees at speeds below 175 kts to shorten the radius of a turn. This greatly aids carrier approaches in particular.

Aerobatics

Loops are entered at 210 kts.

Slow rolls are entered at 180 kts.

Field landings

It is worth remembering that the F4U-1's ground stance is approximately the angle of attack for a stall condition, so try not to approach at such an angle that you might stall close to the ground. A shallower angle is preferable.

Open the canopy. Vision is improved by raising the seat height and leaning to the left or right.

Visually, you can raise the pilot to this position by pressing **[Shift]-[E]-[2]**.

Put the blower in NEUTRAL and set the mixture to AUTO-RICH.

Reduce airspeed to 110 kts and lower the landing gear.

Set the cowl flaps to OPEN and set the intercooler to CLOSED.

Set the flaps to 30 degrees and lock the tail wheel.

Touch down at around 80-90 kts on the main wheels and allow the tail to settle. Do not force the tail down as control will be compromised, and don't brake until all three wheels are on the ground.

Carrier landings

The carrier used in these screenshots is the Victorious as it was in 1944.

Note: *A special 'Carrier Landing' camera view can be toggled from the exterior view to aid with your approach:*

Configure the aircraft as you would for a field landing, but extend the flaps to the fully down (50 degree) position and extend the tail hook.

Descend with a slightly steeper angle of attack so that the tail hook will make contact with the deck on touchdown.

Aim to pass over the deck threshold at around 80 kts (just above stall).

Cut the throttle and let your aircraft drop to the deck.

With luck (skill?) you will trap the wire and all will be well. If not, you will either have nosed over through touching the brakes or be able to apply full power and go around. Either way, keep practising and the reward of a perfect trap will be yours!

We hope you enjoy flying the F4U-1 as much as we did making it!

CREDITS

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