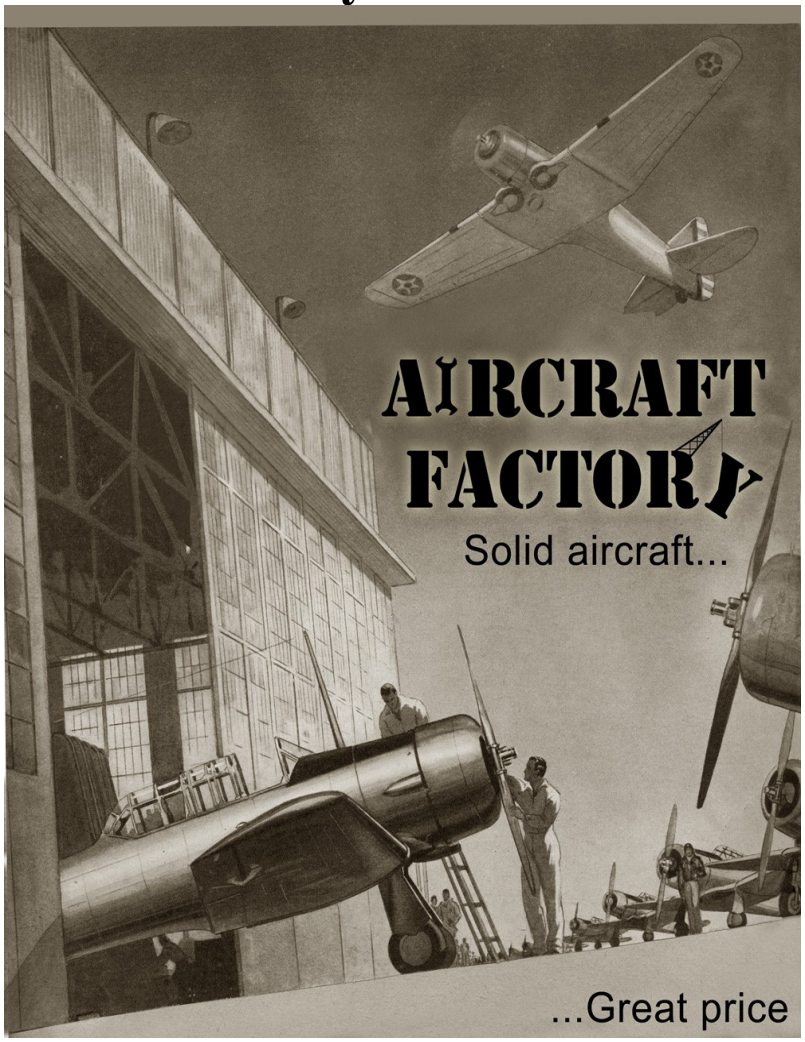
Aircraft Factory: F4U Corsair Handbook

The F4U Corsair comes to you care of the Aircraft Factory



Introduction

The F4U Corsair is a unique aircraft with it's bent wings, long nose, and powerful engine. She was affectionately or sometimes not so affectionately known by her pilots as the Bent-Wing Bird, the Ensign Eliminator, Hose Nose, Hog Nose, Sweetheart or Hog. Their choice of handle for this bird usually depended on their latest adventure within the 4 1/2 to 7 ton envelope of this solid but occasionally quirky airframe.

The F4U was born and bred to be a killer and she excelled at this endeavor, laying claim to an astonishing eleven to one kill ratio by the end of WWII. That doesn't include the unfortunate Ensigns who had so many problems trying to land the long-nosed bird on a carrier that the Navy finally gave up. They assigned the F4U to the Marines who quickly learned to love her for her superior fighting ways.

In her final form, which was the F4U-4, she was certainly in the running for the “Best Fighter of WWII”. The F4U-4 could out climb the P-51 Mustang by almost 800 feet per minute and had exceptional speed at low and mid altitudes.

The F4U Corsair launches the Aircraft Factory for those who want to fly their favorite aircraft but their budget is obviously important. This aircraft stays true to stock Microsoft FSX SDK standards, which streamlines the development process and delivers a highly compatible product.

We have had a lot of fun flying her and believe you will as well.

- The Aircraft Factory Team

Aircraft Factory F4U Corsair Features

- **The premier WWII Fighter in the Pacific Theater.**
- **F4U-1A, F4U-1C, and F4U-1D models included**
- **Highly detailed virtual cockpit with realistic texturing**
- **Naturally animated pilot looks around as you fly**
- **Shockwave/ A2A 3D lights supported**
- **Beautifully created model including attention to wheel wells, engine, and other areas**
- **3D Instrumentation for smooth response**
- **Native FSX Service Pack 2 support (Acceleration supported but not required)**
- **Full FSX support for hassle-free operation**
- **Drop wing tanks remove both fuel and weight when released**
- **Under-wing rockets can be added or removed with a single click**
- **Classic radial-engine sounds inside and out**

F4U History

In June 1938 the Navy ordered a prototype of the Vought design which was designated the XF4U-1. The armament was planned to be a total of four guns only, two .30 caliber Browning machine guns in the top of the nose and a .50 caliber in each wing. The prototype was also supposed to have cute little bomb bays in the outer wings to carry fragmentation bombs which were going to be dropped on formations of enemy bombers. Fortunately cooler heads prevailed and this dumb idea was discarded.

In October of 1940 the prototype clocked 404 mph which impressed the Navy and showed several vices which did not. Not the least of these problems was the tendency for the engine to lose any further interest in operation when at high altitude or worse yet, occasionally burst into flames.

In a further uncharacteristic sign of sanity, when the Navy asked for production proposals in 1940, heavier armament was specified. This resulted in removal of the two 30 caliber nose guns and the addition of a single 50 caliber in each wing for a grand total of four. The additional guns required elimination of the wing fuel tanks and to regain that lost fuel capacity the fuselage was lengthened by 18 inches to provide room for a center fuel tank. Unfortunately this meant the cockpit had to be moved back by 3 feet, further reducing the pilot's forward visibility.

Acceptance trials began in February of 1941 and in June of that year the Navy placed the first production order for 584 aircraft. Improvements followed in short order. The number of guns was increased to six and armor plate was added around the cockpit and oil tank. In addition the engine was upgraded to a 2800-8 which boasted a two-stage supercharger and 2000 take off horsepower. Somebody figured out how to add 57 gallon fuel tanks into each outer wing and an armored glass windscreen and self sealing fuel tanks along with shorter flaps and wider ailerons finished the alterations.

The first production F4U-1's were delivered at the end of July 1942. A total of 12,571 of all types were built.

The Corsair's first combat deployment was Guadalcanal in early 1943 in her first combat engagement was on February 14 during an escort mission. One kill was recorded for that flight but the Marines don't talk about it much since it was the result of an air to air collision with a Japanese plane---score: 1 to 1. Better days were ahead.

Quick Start Guide

Chances are, if you are reading this manual, you have properly installed the Aircraft Factory F4U Corsair. However, in the interest of customer support, here is a brief description of the setup process, system requirements, and a quick start guide to get you up quickly and efficiently in your new aircraft.

System Requirements

The Aircraft Factory F4U Corsair requires the following to run:

REQUIRES LICENSED COPY OF MICROSOFT FLIGHT SIMULATOR X

SERVICE PACK 2 (SP2) or ACCELERATION REQUIRED

OPERATING SYSTEM:
Windows XP SP2
Windows Vista

PROCESSOR:
2.0 GHz single core processor (3.0GHz and/or multiple core processor or better recommended)

HARD DRIVE:
250MB of hard drive space or better

VIDEO CARD:
DirectX 9 compliant video card with at least 128 MB video ram (512 MB or more recommended)

OTHER:
DirectX 9 hardware compatibility and audio card with speakers and/or headphones

Installation

Included in your downloaded zipped (.zip) file, which you should have been given a link to download after purchase, is an executable (.exe) file which, when accessed, contains the automatic installer for the software.

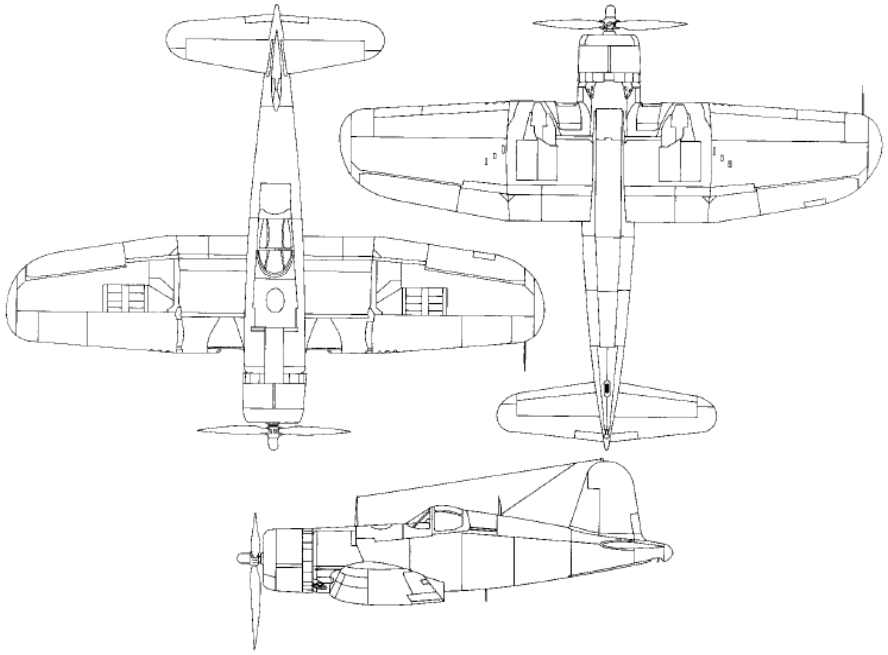
To install, double click on the executable and follow the steps provided in the installer software. Once complete, you will be prompted that installation is finished.

Quick Flying Tips

- Use 30 degrees of flaps for takeoff (hit the F7 key three times).
- If full power is needed on takeoff, prepare to apply right rudder during the roll and right aileron as aircraft lifts off
- After takeoff, hit the F6 key to raise flaps in 10 degree increments
- For landings, take the time to line up and plan your approach. Keep your eye on the speed at all times.
- For emergency boost, water injection, go to your SETTINGS / CONTROLS / BUTTONS and map a key or controller button to War Emergency Power.
- To remove rockets, click on the switch furthest back on the right
- When braking with the keyboard at high speeds, pull back your elevator to avoid nosing over

General Description

Model F4U-1A Specifications



Wing Span	41 feet
Length	33 feet, 4 inches
Height	16 feet, 1 inch
Powerplant	2,000 horsepower Pratt & Whitney R-2800-8W engine
Weights	8,892 lbs empty weight 14,000 lbs max takeoff weight
Service Ceiling	36,900 feet
Top Speed	417 mph / 363 Knots at 20,000 feet
Climb	3,250 feet/minute
Fuel	361 gal (internal), 170 gal and 154 gal external tanks available
Range	Max 1015 miles
Armament	Six .50 caliber wing-mounted machine guns

F4U Variants

F4U-1A

- Provisions for centerline drop tank installed
- Engine equipped with water injection
- General design improvements

F4U-1D

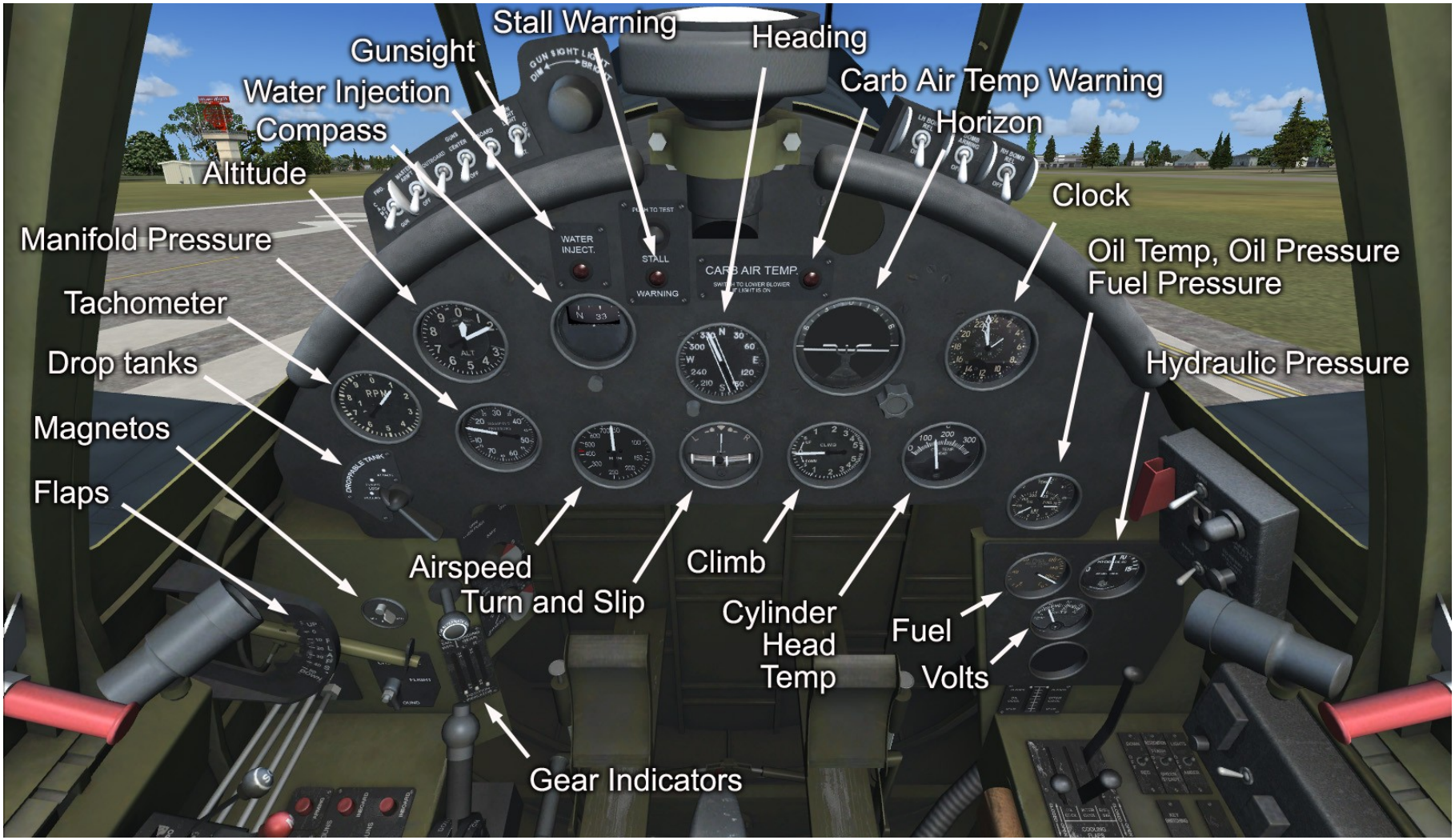
- Unprotected internal wing fuel tanks removed
- Two under-wing pylons for bombs and external tanks replace single centerline pylon
- Provisions added to carry under-wing rockets
- Cockpit modifications

F4U-1C

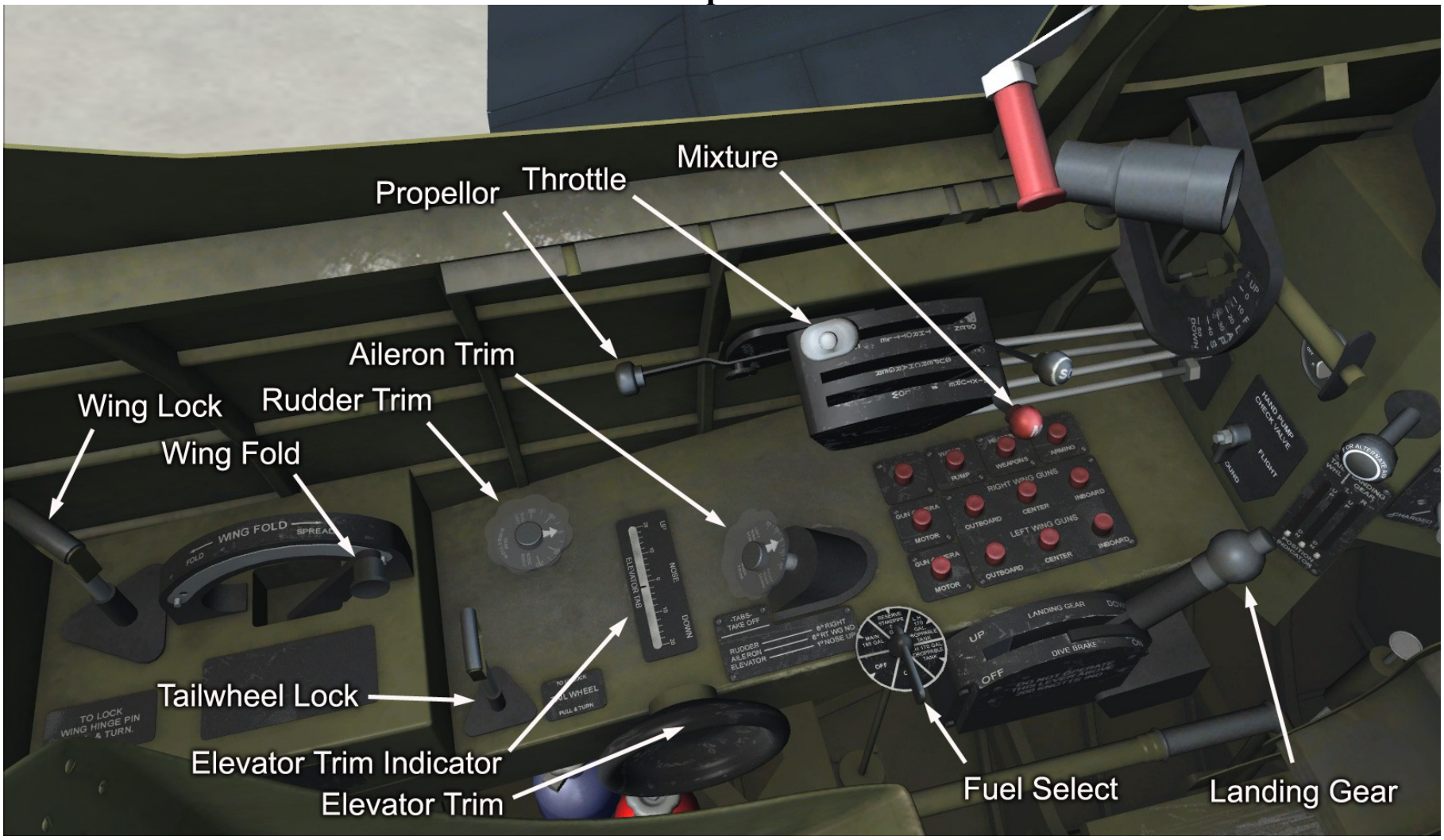
- Four 20mm cannons replace six machine guns in the wings of the D model.

Cockpit

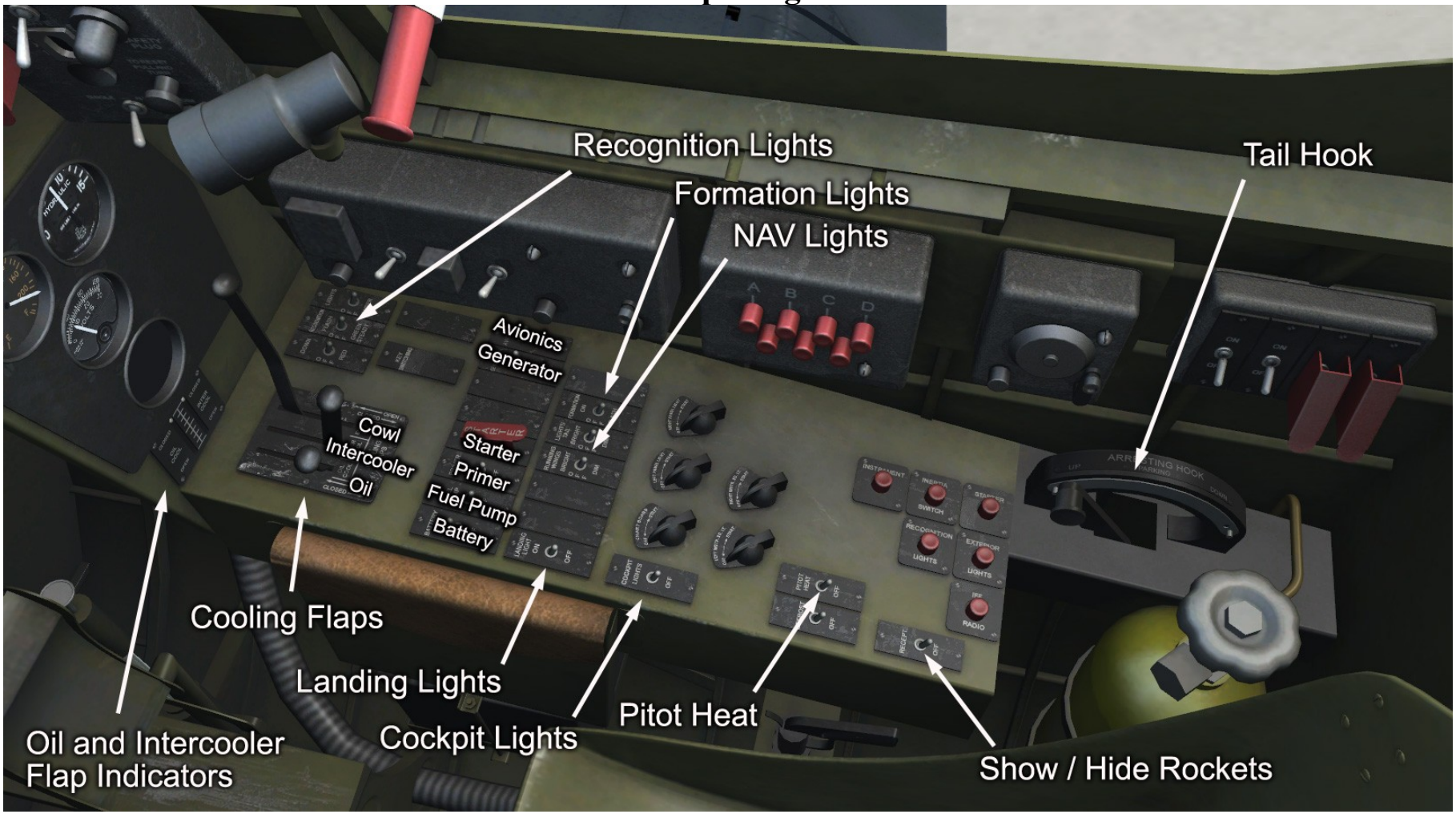
Cockpit Front



Cockpit Left



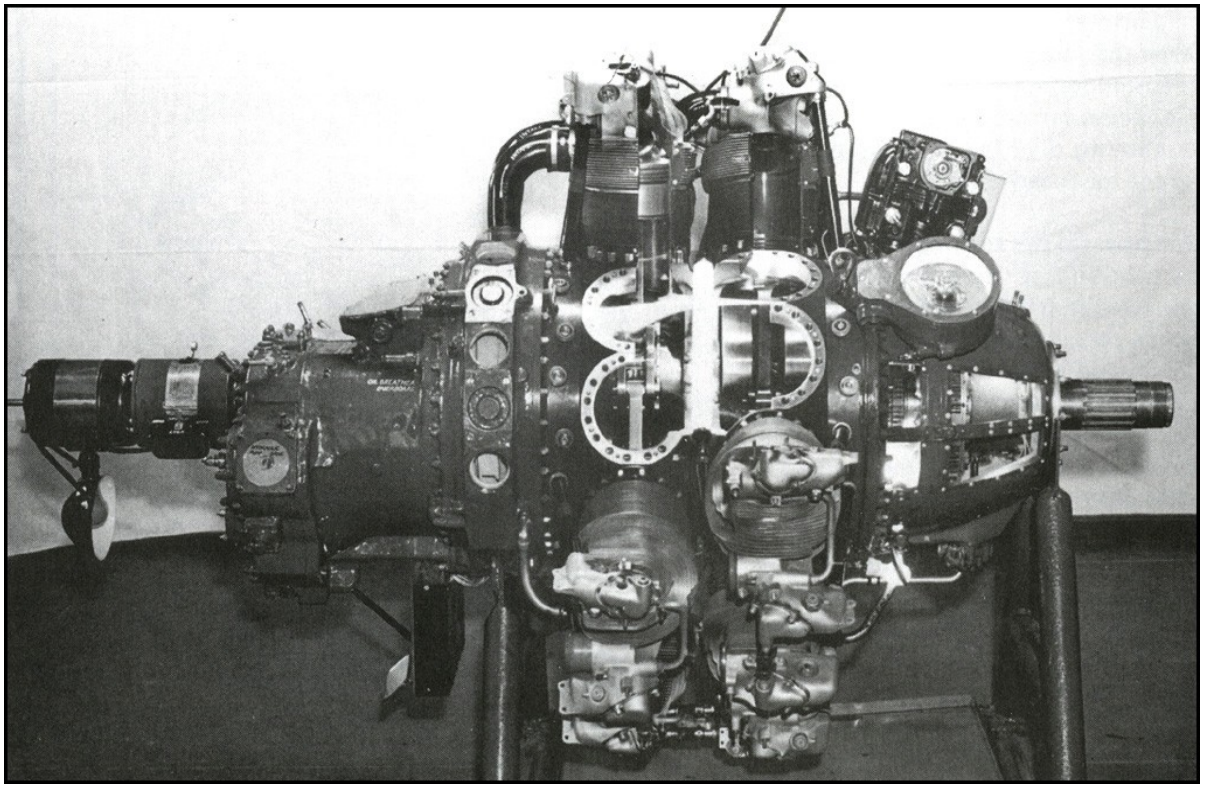
Cockpit Right



Powerplant

The Pratt & Whitney R-2800 engine is a twin-row, 18-cylinder, supercharged, air-cooled engine. Water injection is provided for high power settings. This engine in the F4U Corsair is capable of developing a maximum (at sea level) of 2000 BHP dry (without water injection) or 2250 BHP wet (with water injection).

Perhaps the greatest tribute to the R-2800 was made by Dr. Ing. Richard Vogt, who headed the aircraft division of Blohm & Voss. After inspecting and testing a captured R-2800, he was quoted as saying, “How could our leaders have ever dreamed of going to war against a nation which could afford to build such a beautiful engine for a warplane.” The engine surfaces were created to such perfection there was no oil seepage between the power sections, even without internal seals.



Normal Operations Checklists

BEFORE ENGINE START

IGNITION SWITCH ----------OFF
MIXTURE ----- IDLE CUT-OFF
PROP ---- LOW PITCH (DOWN FULL)
FUEL SELECTOR ---- RESERVE
COWL FLAPS ------- FULL OPEN
THROTTLE ----- OPEN 1 INCH

ENGINE START

BATTERY SWITCH ----- ON
FUEL PUMP ----- ON
PRIME FOR CONDITIONS
IGNITION SWITCH ----- BOTH
START SWITCH ----- ON
MIXTURE ----- RICH
FUEL PUMP ----- OFF

WARM UP

IDLE --- 1000 RPM
PROP PITCH ----- LOW
COWL FLAPS ----- OPEN WIDE
OIL COOLER FLAPS – CLOSED
INTERCOOLER FLAPS --- OPEN
CYL. HEAD TEMP – 232ºC MAX.

TAKE-OFF

WINGS “SPREAD” – HOOK “UP”
FUEL TANKS ----- RESERVE
MIXTURE ----- CHECK
BLOWER ----- NEUTRAL
PROP ----- LOW PITCH
COWL FLAPS ----- 2/3
INTERCOOLER FLAPS -- CLOSED
OIL COOLER FLAPS - AS NEEDED
RUDDER TAB --- 6 DEGREES RIGHT
AILERON TAB – 6 DEGREES RIGHT
ELEVATOR TAB – 1 DEGREE UP
WING FLAPS ----- 30º DOWN
TAIL WHEEL ----- LOCKED
THROTTLE TO --- 54 INCHES MAX
MONITOR CYL HEAD TEMP
MONITOR OIL TEMP

CLIMB

LANDING GEAR ----- UP
FLAPS ----- UP
THROTTLE ----- 44 INCHES
PROP ----- 2550 RPM
TRIM FOR 125 KNOTS (BEST CLIMB)
COWL FLAPS – AS NECESSARY
OIL COOLER FLAPS – AS NEEDED
FUEL TANK TO DESIRED TANK

CRUISE

NORMAL
34 INCHES -----2150 RPM

BEST ECONOMY
30 INCHES ----- 1300 RPM
AT 5000 FEET

APPROACH

TAILWHEEL ----- LOCKED
FUEL PUMP ----- ON
FUEL SELECTOR ----- RESERVE
PROP ----- 2350 RPM
COWL FLAPS ----- CLOSED
LANDING GEAR ----- DOWN
FLAPS ----- AS NEEDED
OPEN CANOPY
90 TO 95 KNOTS APPROACH SPEED

NOTE:

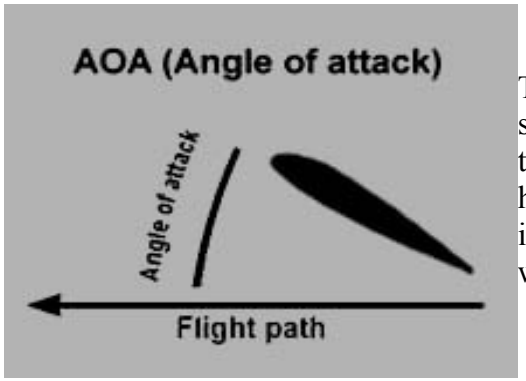
USE BRAKES CAUTIOUSLY UNTIL TAIL WHEEL ON GROUND

SHUT DOWN

COWL FLAPS ----- OPEN
INTERCOOLER FLAPS ----- OPEN
OIL COOLER FLAPS ----- OPEN
PROP ----- LOW RPM
THROTTLE ----- 800 TO 900 RPM
CYL TEMP ----- 170 OR BELOW
FUEL PUMP ----- OFF
MIXTURE ----- IDLE CUT-OFF
THROTTLE ----- FULL OPEN
IGNITION ----- OFF
BATTERY ----- OFF
FUEL SELECTOR ----- OFF
ALL SWITCHES ----- OFF

Stalls Explained

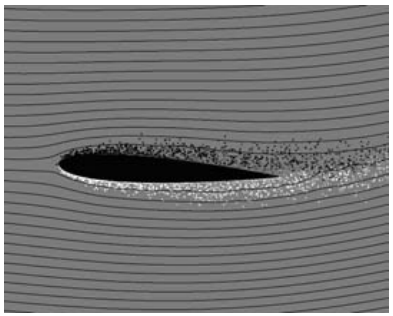
WHAT IS A STALL? In order for a wing to produce efficient lift, the air must flow completely around the leading (front) edge of the wing, following the contours of the wing. At too large an angle of attack, the air cannot contour the wing. When this happens, the wing is in a "stall."



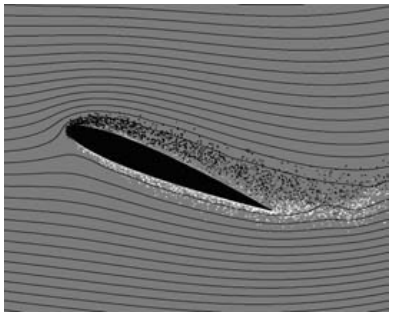
Typically, stalls in civilian aircraft occur when an airplane loses too much airspeed to create a sufficient amount of lift. A typical stall exercise would be to put your aircraft into a climb, cut the throttle, and try and maintain the climb as long as possible. You will have to gradually pull back harder on the stick to maintain your climb pitch and as speed decreases, the angle of attack increases. At some point, the angle of attack will become so great, that the wing will stall (the nose will drop).

Below are some graphical representations of a wing traveling though the air in various conditions:

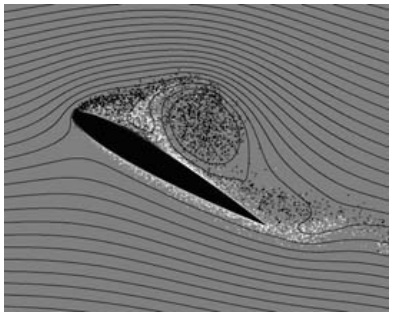
LEVEL FLIGHT
A wing creating moderate lift. Air vortices (lines) stay close to the wing.



CLIMB
Wing creating significant lift force. Air vortices still close to the wing.



STALL
The angle of attack has become too large. The boundary layer vortices have separated from the top surface of the wing and the incoming flow no longer bends completely around the leading edge. The wing is stalled, not only creating little lift, but significant drag.



CREDITS

Base 3D model by: Milviz

Remodeling and modifications by: Aircraft Factory

Flight Modeling: Aircraft Factory / Beckwith

Audio: Stephen Barstow

Manual: Don Hepler

Beta Testing: The Aircraft Factory Beta Team, including Cody Bergland (lead), Gary Carr, Forest "FAC257" Crooke, Glenn Cummings (GlennC), Ryan "Hog Driver" Gann, Mitchell Glickman, Larry Green, Captain Jakey, Erwin Schultze (dutch506), Guenter Steiner, Paul "Gypsy Baron" Strogen, Oskar Wagner.

We leave you with this beautiful shot of one very special aircraft.

We know you have a choice of what products to buy,
and we thank you for choosing the Aircraft Factory.

- The Aircraft Factory