



F7F-3 Tigercat
for X-Plane 12
USER MANUAL

Introduction

The F7F Tigercat, which was derived from Grumman's first twin-engine fighter, the XF5F-1 Skyrocket, appeared as the result of a Navy request in June 1941 for development of a larger, twin-engine fighter for use on board the planned large aircraft carriers (Midway-class). The airplane was the first twin-engine fighter ordered in large quantities and the first carrier aircraft to incorporate tricycle landing gear. Built in single and two-seat variants, the heavily armed fighter served in ground support, night fighter and photo reconnaissance roles after World War II and in Korea.

Ordered by the Navy in June 1941, the XF7F-1 was Grumman's second attempt at a twin-engine fighter, the first having been the unsuccessful XF5F-1 Skyrocket. The new fighter, intended for use aboard the large Midway-class carriers, would be the first carrier aircraft to employ tricycle landing gear. The new aircraft, while designated a fighter, was heavily armed to perform in the ground support role, equipped with four 20mm cannon and four .50-caliber machine guns. It also was capable of carrying two 1,000 lb. bombs on underwing stations or one torpedo under the fuselage. First flown in December 1943, the XF7F-1 was hurried into production to meet Marine Corps demands for 500 of the aircraft to support Pacific operations. Deliveries began in April 1944, but changes in operational requirements led to production delays. With 34 single-seat models delivered, production switched to a two-seat night fighter, designated the F7F-2N, a total of 65 of which were built. Grumman then built 189 F7F-3s, which were similar to the F7F-1, but modified with higher rated Pratt & Whitney R-2800-34W engines.

Further production under the original contract was cancelled as war's end drew near, but a separate contract produced 60 more F7F-3Ns and 13 F7F-4Ns, production ending in late 1946. Both models were configured as night fighters, equipped with radar in an elongated nose, and a larger fin. Later modifications produced specially equipped F7F-3Es and F7F-3Ps for electronic reconnaissance and photo reconnaissance respectively.

Too late for service in World War II, the Tigercat served in several Marine Corps squadrons after the war and later performed close air support, night fighter, reconnaissance and utility missions during the Korean War. Well designed, the F7F was one of the fastest fighters of the World War II era. Unfortunately, its operational life coincided with the advent of more powerful, faster jet aircraft, rendering it obsolete after only a few short years.

Support

Should you experience difficulties or require extra information about the Virtavia Tigercat, please e-mail our technical support on tech.support@virtavia.com

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Quick Start

Starting from cold – Assuming the aircraft was left in the fully shut down state and all switches and levers are in their usual OFF position, then follow the quickstart procedure below or alternatively follow the more detailed in-game checklist, which is reproduced at the end of this manual.

Check park brake is on (the red handle on the pilot's left).

Set Master Battery switch to ON

Set Fuel Selector Handle to MAIN (this is the default setting)

Set Fuel Booster Switch to ON (this is the default setting)

Start engines using either the Magneto switches (left panel) or the starter toggle switches on the right side console.

Take-Off - set one notch of flaps. Set 5 degrees of nose-up trim (pitch trim handwheel left side of seat, trimwheel rotates back, towards pilot). Release the red parking brake handle (or toggle brakes off using a key or button). Advance throttles to full power. Raise nosegear at 110knots. Retract the gear immediately to reduce drag. Accelerate to 140 kts, retract the flaps and start the climbout. Reduce power to 50-60 inHg manifold pressure while climbing and set it to 40 inHg once levelled off to maintain 200-250 kts cruise.

Approach & Landing –

Approach : The aircraft has no speedbrakes and merely throttling back will allow will not immediately reduce airspeed. To slow the aircraft down, make some tight turns and set one notch of flaps at 180 kts and you can enter the pattern.

Final : At 160 kts lower the undercarriage and set flaps to position 2 of 3. At 130 kts extend the flaps fully. Maintain a steady rate of descent of around 300 ft/min and a speed of 130 kts. Set pitch trim to the maximum 10 degrees nose up.

Landing : When the runway threshold is visible, hold speed at 130 kts. Unless flying the 'Clean' variant, the presence of the drop tank(s) mean that slowing below 120 kts is not recommended as the nose will rapidly become very heavy and a stall is very likely below 100 kts (this situation is greatly improved if drop tanks are set to Empty prior to landing). Once over the runway at 10-20 ft, fly the aircraft all the way to a gentle touchdown at 120 kts. Attempt to alight on the main wheels. Only chop the throttles once landed not whilst airborne, apply brakes as required.

Speed Limitations

- Full Down Flaps: 130 knots
- 30 deg. Flaps Down: 150 kts
- 15 deg. Flaps Down: 225 kts
- Landing Gear Down: 250 kts
- Maximum indicated speed (diving): 410 knots

Maximum Recommended Gross Weights

- Landing on Ordinary Fields: 18,000 lbs
- Routine Landing on Prepared Fields: 21,500 lbs
- Field Carrier Landings (non-arrested): 18,000 lbs
- Catapult Launchings: 25,000 lbs
- Arrested Landings: Not Permitted

Recommended Power Settings

Maximum Continuous MAP (one hour limit):

- Sea Level - 16,000 ft: 41 inHg
- 16,000 - 30,000 ft: Full Throttle

Maximum Cruise MAP (unlimited):

- Sea Level - 18,000 ft: 32 inHg
- 18,000 - 30,000 ft: Full Throttle

Exterior Model

About this model

The Virtavia F7F-3 Tigercat package provides four unique loadouts, each one has its own unique flight dynamics :

'Clean' : No external stores. Note: the 'White 5' fictional variant depicts a basic 'racer' and so lacks guns and cannons. It also has squared-off propeller tips.

'Ferry' : Carries three drop tanks for extended range.

'Fighter' : Carries one belly drop tank. The typical day fighter loadout.

'Rocket' : Carries one belly drop tank and eight underwing unguided rockets. The typical ground attack loadout. Note: due to an XP limitation, the rocket-equipped version lacks the ability to fold the wings.

Animations

The Tigercat exterior model has all the usual animations such as ailerons, elevators, landing gear and flaps. Additional animations on the exterior model are:

Crew Visibility Toggle

Pressing shift-F2 will toggle the pilot figure.



Oil Cooler Exit Doors

Pressing shift-F4 and shift-F5 opens/closes the engine oil cooler air exit doors on the wing upper surface.



Opening the doors has no effect on oil temperature in the sim.

Pilot Step



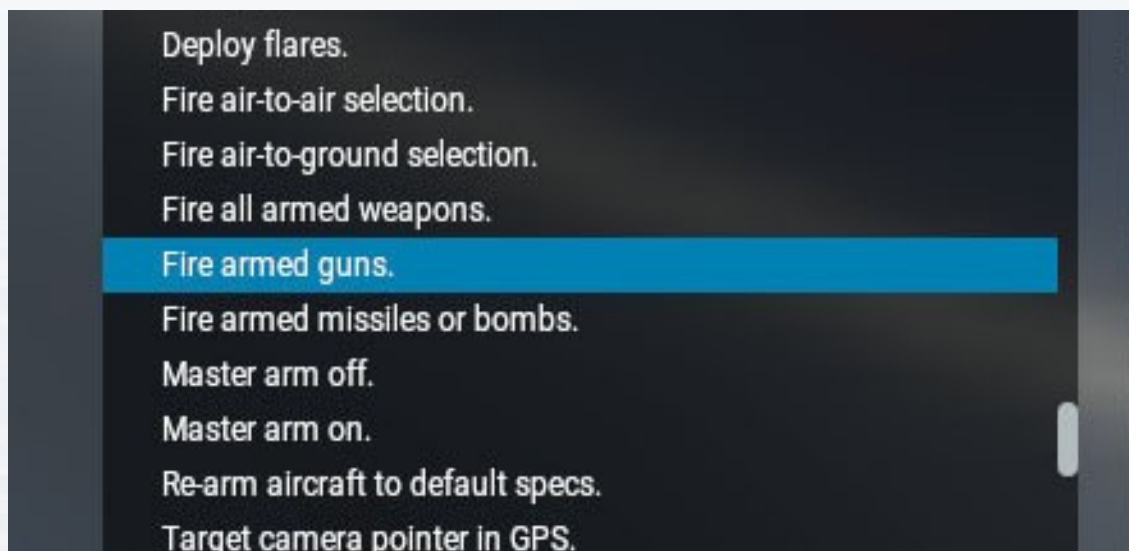
Cockpit

Firing guns and cannons



Once the weapons are armed using switches in the cockpit, a key press or joystick trigger/button can be used to fire the guns and cannons simultaneously. The procedure is outlined below :

1) Set up a firing switch or button. Go to the XP options for Keyboard or Joystick and assign 'Fire armed guns' to a key or button.



2) Ensure the Armament Master Switch is ON (this switch is ON by default in XP).

3) Set the Wing Guns / Fuselage Guns switches to ON. The switches operate as a single switch as XP does not discriminate between machine guns and cannons.



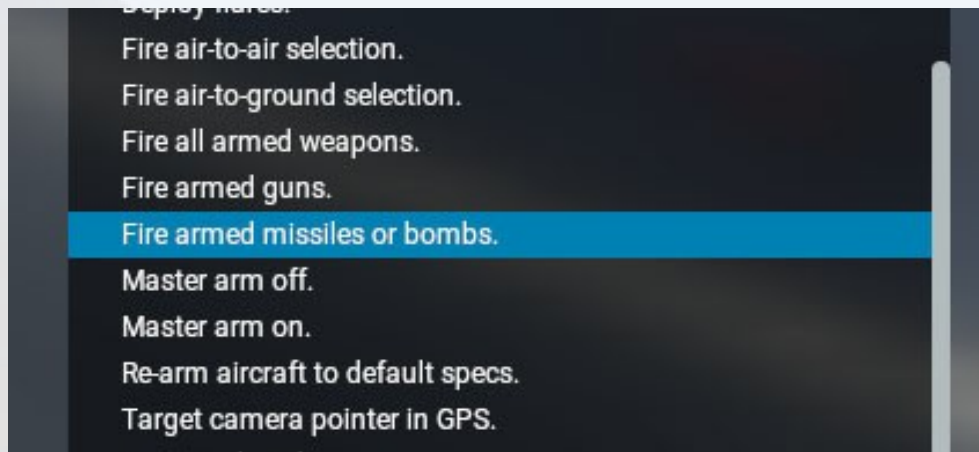
4) Pressing the key or button will now fire the weapons. Note, XP does not model impact damage on objects, this is a visual effect only.

Firing Rockets



Once the weapons are armed using switches in the cockpit, a key press or joystick trigger/button can be used to fire unguided rockets. The procedure is outlined below :

1) Set up a firing switch or button. Go to the XP options for Keyboard or Joystick and assign fire 'armed missiles or bombs' to a key or button.



2) Ensure the Armament Master Switch is ON (this switch is ON by default in XP).

3) Set the Rockets Arming switch to ON.



4) Pressing the key or button will now fire the rockets. Only one rocket will be fired per key or button press, they will fire from each side of the aircraft alternately. Note, XP does not model impact damage on objects, this is a visual effect only.

Main Instrument Panel



The panel is mostly self-explanatory, operable knobs and switches can be identified using the 'Show Instrument Click Regions' option in the XP view menu, their function can be ascertained by hovering over with the cursor as long as the 'Show Instrument Descriptions' option is on. There are also some custom features which are outlined here.

Radio Magnetic Compass



The compass (RMI) used in the Tigercat has a fixed face, it does not rotate like more modern instruments. The white needle always points in the direction the aircraft is heading. The rectangular yellow needle is set

up to indicate the relative direction of the currently tuned NAV1 station (use the map screen to tune the station). The small knob to the lower left is used to set the small yellow triangular marker on the periphery of the dial, this is the autopilot heading (HDG) indicator. This is not an authentic part, it was added for the convenience of the user (*autopilot is presently not enabled as we wait for an XP update to fix this).

'Blank' Areas



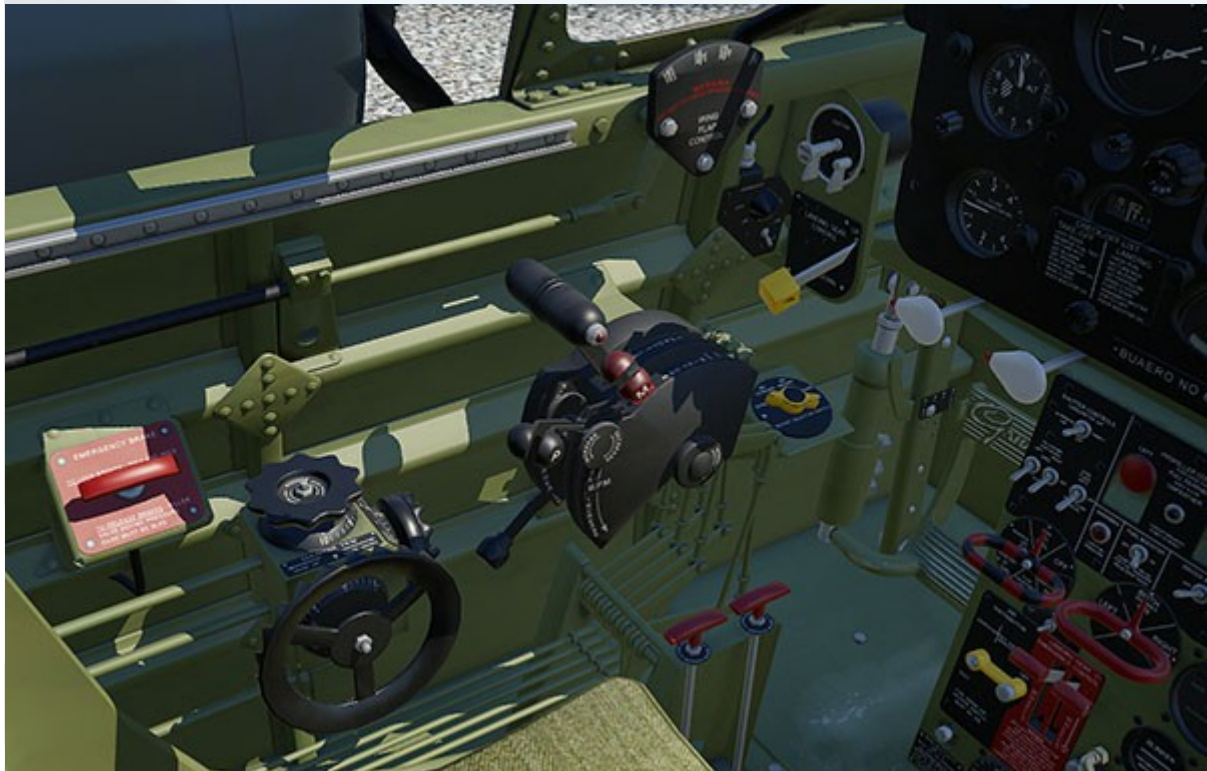
There is not a 'missing gauge' in the panel, The empty gauge hole and adjacent rectangular area are authentic. The rectangular area is where the pilot's radar scope is fitted on the 2-seater night fighter Tigercat (F7F-3N). The gauge would be a radar altimeter on the night fighter, Grumman elected to not use the space for another instrument. The 'Push To Turn' knob on the left is also part of the radar altimeter system and is not used in this simulation.

Autopilot Switches



The small oval area on the right side of the panel is normally blank on the F7F-3 day fighter, its purpose being to accommodate three lamps associated with the radar altimeter system of the night fighter version. We have used this area to house a pair of toggle switches used to activate Altitude Hold (ALT) and Heading Hold (HDG) for the convenience of the user. **These are presently not enabled as we await a future X-Plane update to fix their operation.

Left Side of Cockpit



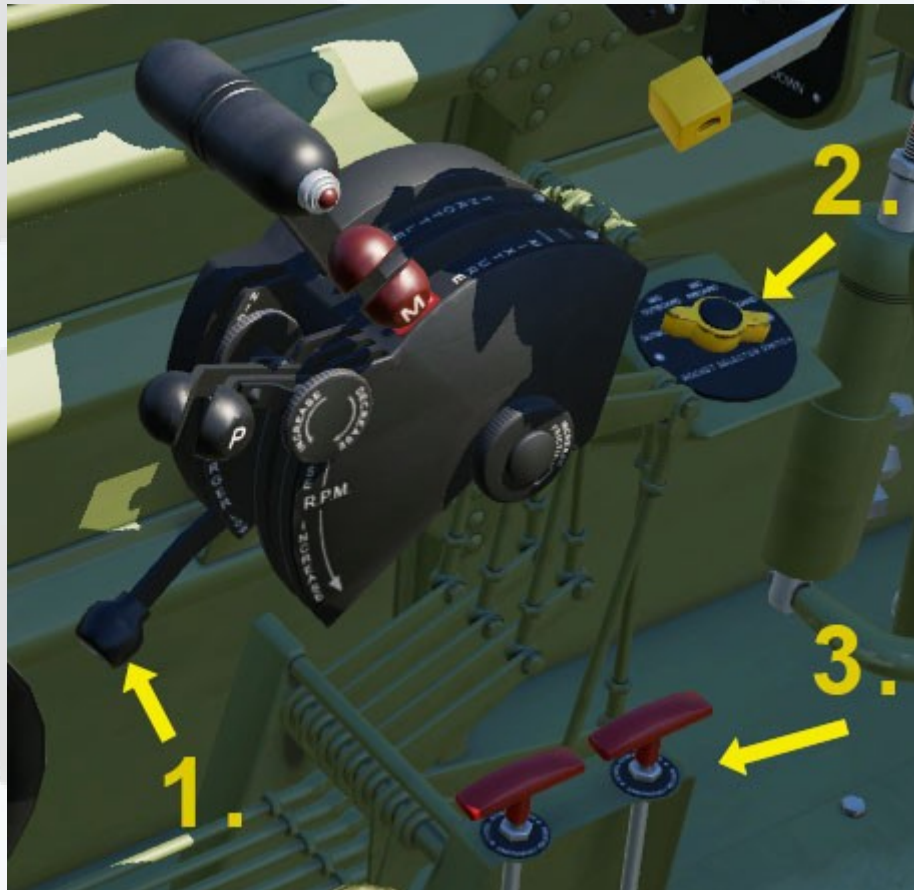
The main features on the left side are flaps & gear operation, the throttle quadrant, trim controls, magneto switches and emergency brake handle. Additional points of interest are outlined below :



1) Magneto Switches (standard L, R, start). Center Ignition Switch is not enabled.

2) Gunsight Visibility Toggle. This switch removes the entire gunsight and the windscreen reticle image from view.

3) Gun Charging Handles. These are simple simulations of the charging mechanism used to prime the machine guns in the nose for use. They have no function in the sim and are not needed to fire the guns.



1) Supercharger Handle. X-Plane does not presently support forced induction so, whilst this lever can be operated, it has no effect on performance of the engines.

2) Rockets Selector. The switch can be operated but, whilst X-Plane does support a range of release options for bombs, this feature is not available for the rockets.

3) Drop Tank Release Handles. The handles can be operated but presently do not release the tanks, hopefully there will be a future X-Plane update to rectify this.

Emergency Brake Handle



The E-Brake can be used to toggle the parking brake in this simulation.

Cockpit Center Panel



The center panel is well-labelled and the switches and levers are self-explanatory. Although most can be operated by the user, XP shortcomings mean that many do not have any function in the simulator. Those that DO have a function are explained below.



1) Shutter Controls Switch. This functions as the carb heater and should always be ON unless the environment air temperature is high.

2) Oil Cooler Exit Doors Switches. Toggles the open/close position of the doors on the upper wing (also use shift-F4 for left side door and shift-F5 for right side door).

3) Cowl Flaps Switch. Drag left or right to open/close the cowl flaps on both engines simultaneously.

4) Fuel Booster Switch. Toggles fuel tank No.1 (does not 'boost' fuel).

5) Water Injection Switch. Toggles the water injection boost system.

6) Propeller Feathering Controls. Toggles full feathering of the propeller blades.

7) Wing Folding Safety Control Lever. This lever will toggle the wing fold mechanism. On the real aircraft this would have been a safety lock only, however in the sim it allows easy user control over wing folding. Note: The version with the underwing rockets loadout has the wing folding disabled. This was due to X-Plane not being able to correctly animate the rockets to align with the wing.



8) Fuel Selector Handle. Non-functional (format unsupported in XP12).

9) Engine Selector Handle. Non-functional.

10) Fuel Gauge. The Tigercat's internal fuel tanks are all in the fuselage. The smaller auxiliary tank sits forward of the pilot, the reserve and main tanks are aft of the pilot. Changes to the auxiliary tank capacity will necessitate pitch trim changes due the lighter/heavier nose.

Right Side of Cockpit



The main features on the right side are canopy handle, electrical systems control, tail hook handle and rudder booster handle. Additional points of interest are outlined below :



The pilot's electrical control console is well-labelled and functions are generally self-explanatory. All switches are animated but only a few have an actual function in the simulator due to its limitations.

1) Generator Switches. The two guarded switches at the front of the console toggle the left and right engine-driven generators. These must always be ON during normal operation to ensure the battery does not become discharged.

2) Lights Switches. There are switches for landing and navigation lights (labelled as 'running lts'), all other light switches are non-functional in the simulator.

3) Master Battery Switch. This is essential for engine starting.

4) Pitot Heater Switch. Self-explanatory.

5) Radio Master. Toggles power to the NAV1 system. Must be on to use the NAV1 needle on the Radio Magnetic Compass on the main panel. Also, the autopilot toggle switches will remain inoperable if the Radio Master switch is off (autopilot currently not working due to XP limitation).

6) Primer Switches. These spring-loaded switches prime the engine fuel system prior to running the starters. These are not essential to start the engines and are included for authenticity only.

7) Starter Switches. These can be used to start the engines as an alternative to the Magneto Switches on the left side of the main panel.

8) Cockpit Lighting Rheostats. These knobs can be dragged to adjust the brightness level of the gauges and general cockpit flood lighting. They default to a low setting and are on by default in daylight.

Radios

The row of boxes on the right side of the cockpit represent the Tigercat's AN/ARC-5 VHF/MHF communication equipment and the APX-1 IFF system. Although some of the switches are animated, the equipment is a visual representation only and has no function in the simulator. The user should open the map screen and click on the VOR beacon or runway ILS image and select the 'Tune NAV1' option, the RMI will now point to the station as long as it is in range.

Virtavia recommends using the free X-Plane utility '[AviTab](#)' by Folko. This great add-on will allow the user much more control over tuning of radio frequencies, map display and navigation in general. It is compatible with XP12, it is also perfect for VR usage.



1) Arresting Hook Lever. Self-explanatory.

2) Rudder Booster Lever. This toggles the Yaw Damper system built in to X-Plane's flight dynamics modelling and is essential for flying the Tigercat correctly. It is difficult to access the lever, use the arrow keys on the keyboard to slew the view point so the lever can be seen. It is advisable to have a key press or a joystick button set to quickly re-center the pilot's viewpoint after changing the view to this extent.

Tigercat Specifications

Specifications

- Manufacturer: Grumman Aircraft Engineering Corporation
- Type: Carrier or land-based fighter-bomber
- Crew: One pilot (day fighter), pilot and radar operator (night fighter)
- Engines: Two Pratt & Whitney R-2800-34W 18-cylinder supercharged dual-row air-cooled radials
- Power: 2,100 h.p. each
- 3-bladed constant-speed Hamilton Standard Hydromatic propellers
- Maximum speed: 435 mph / 378 knots at 22,000 feet
- Cruise speed: 222 mph / 193 knots at 10,000 feet
- Service ceiling: 40,700 feet
- Combat radius: 1,200 miles
- Rate of climb: 4,350 ft/min
- Wingspan: 51 feet 6 inches
- Length: 45 feet 4 inches
- Height: 16 feet 7 inches
- Wing area: 435 square feet.
- Empty Weight: 16,270 pounds
- Maximum Weight: 25,720 pounds
- Armament: Four 20mm cannons and four .50-caliber machine guns; two 1,000 lb. bombs or one torpedo; 8 x HVAR unguided rockets under wings
- Lifespan: 1944-1954
- Number built: 364

Tigercat Procedures

Engine Start / Preliminaries

1. Set Parking Brake ON.
2. Set Navigation lights ON.
3. Set Throttle Levers to IDLE.
4. Set Mixture Levers to IDLE CUT OFF.
5. Set Master Battery Switch to ON.
6. Wings position down CHECK.
7. Check Master Armament Switch OFF.
8. Set Gyro-Horizon to UNCAGED.
9. Set Rudder Booster Handle ON.
10. Set Engine Selector Handle to BOTH.
11. Set Fuel Tank Selector Handle to MAIN (or desired tank).
12. Set Fuel Booster Pump Switch to ON.
13. Flick both Engine Primer Switches 2 times to ON.
14. Set Cowl Flaps OPEN.
15. Set Oil Cooler Exit Flaps OPEN.
16. Supercharger Lever set 'low' CHECK.
17. Set Generator Switches to ON.
18. Fuel Quantity Status CHECK.
19. Hold Left Engine Starter Switch until engine runs.
20. Left Engine Oil and Fuel pressures CHECK.
21. Repeat 19 & 20 for Right Engine.
22. Set Landing Lights Switch ON (as required).
23. Set Pitot Heat Switch to ON (as required).

Taking Off

1. Set Parking Brake OFF.
2. Set Cowl Flaps fully CLOSED.
3. Landing Flaps to one notch SET.
4. Trim nose-up pitch (5 deg.) SET.
5. Brakes SET.
6. 50% power smoothly APPLY.
7. Brakes RELEASE.
8. Accelerate gradually to 100% power.
9. Rotate and lift off at 110 kts.

After Take- Off

1. Landing Gear RAISE.
2. Landing Flaps RAISE.
3. Accelerate to 140 kts before starting climbout.
4. Set Landing Lights Switch OFF.
5. Oil Cooler Exit Flaps CLOSE.
6. Supercharger Lever 'high' SET.

Approach and Landing

1. Slow to 200 kts and enter pattern.
2. Landing Lights as required SET.
3. Landing Flaps Lever one notch SET.
4. Rudder Booster Handle on CHECK.
5. Supercharger Lever 'low' SET.
6. Crosswind leg, slow to 180 kts.
7. Landing Flaps Lever second notch SET.
8. Turn to Final.
9. Lower Landing Gear.
10. Slow to 130 kts.
11. Trim maximum nose-up pitch SET.
12. Landing Flaps Lever fully SET.
13. Slow to 120 kts.
14. Touchdown at 120 kts.
15. Apply brakes as required.

Shutdown

1. Landing Lights Switch OFF.
2. Set Landing Flaps RETRACTED.
3. Set Mixture Levers IDLE CUT OFF.
4. Supercharger Lever 'low' CHECK.
5. Check Master Armament Switch OFF.
6. Pitot Heater Switch OFF.
7. Navigation Lights OFF.
8. Magneto Switches OFF.
9. Fuel Tank Selector Handle OFF.
10. Engine Selector Handle OFF.
11. Rudder Booster Handle OFF.
12. Wings fold AS REQ'D.