# F8F Bearcat

## User Manual (FSX)

**VERSION 1.00**

Vertigo studios

# Table of Contents

# The F8F Bearcat

## Introduction

The Grumman F8F Bearcat was an American single-engine naval fighter aircraft of the 1940s. It went on to serve into the mid-20th century in the United States Navy and other air forces, and would be the company's final piston-engine fighter aircraft.

French aircraft saw combat service against the Viet Minh in the First Indochina War as fighter-bombers in the early 1950′s. Used to support French Forces at the Battle of Dien Bien Phu, they operated at the edge of their combat radius. Nearly 70 surviving aircraft passed to the Vietnam Air Force upon its creation in 1955.

The Bearcat has been designed to take advantage of all the graphical features FSX has to offer, including fully-custom specular shine textures, high resolution bump mapping, self-shading and 3D sound cones.

## Noteworthy features

- A gorgeously constructed 3D model, both inside and out!

- 3D 'Sound Cone' Technology.

- Fully customised lighting control system implementation, including individually created night-lighting effects.

- 'Tru3D' Gauges for the ultimate smooth flying experience.

- **VStudios**-customised materials give the most realistic appearance to the aeroplane.

- **VStudios** own 'configuration editor':

  - Features include a 'live' payload editor, the ability to call for a Moline NTX tractor, many different weapons and more!

- Six high-resolution and detailed paint schemes and two historically accurate models.

- Accurate starter sequence and representative engine parameter replications!

**Known FSX Issues:**

- Lights can appear to differ in position when viewed from different viewpoints, such as the tower view. This is a documented FSX issue, and not an issue with the model. Internal lights are known to have issues under 'DX10 Preview Mode'.

## Installation & Technical Support

The Bearcat can be installed by simply double-clicking the packaged .exe file. The Bearcat should be installed to the root directory of FSX.

A paint kit can be obtained by following the links on the **VStudios** website.

The paint kit requires Adobe Paintshop to be used correctly.


Product support is available 24/7 by way of our online support system.

In order to access the support system, please access:

# http://www.vertigostudios.co.uk/helpdesk/

**Whilst VStudios will endeavour to view and consider any and all forum posts, support can only be guaranteed via the correct (above) method. VStudios has no obligation to provide support on any third-party forum or community.**

## Package Contents

### Modules

The Bearcat is installed with a number of modules that allow the aeroplane to interface with Flight Simulator, and to ultimately function correctly.

Upon running FSX for the first time after installing the package, a security dialogue may be presented. Accepting the dialogues will allow the F8F to function as intended.



**Figure 1 - Blueprint Module Dialogue**



**Figure 2 - Sound Control Module Dialogue**

**Figure 3 – Accepting the module for use**

## Variants Included

### F8F-1 Bearcat

94950, USNR, NAS Olathe, c.1948



94986, '4', Blue Angels, USN, c.1946

95492, G.C.1/9 'Limousin', Arm é e de l'Air, Cat-Bi, c.1951



### F8F-2 Bearcat

122663, VU-4, NOTS Chincoteague, VA, c.1951

121765, VU-7, NAS Miramar, CA, c.1951



203/C, CVG-6, CVB-43 USS Coral Sea, c.1950

# Familiarisation

## Camera Views

The Bearcat has multiple pre-set camera views to choose from, some of which are helpful when navigating the large cockpit. Right click at any time whilst in-game to view the camera menu.

Virtual Cockpit



Left Cockpit Overview



Right Cockpit Overview



Moline NTX

**Tail**



**Right Wing**



**Left Wing**



**Payload Camera**



**Crew Chief Camera**



**Nose Right**

## Cockpit Tour – Forward Panel



1. Windshield degreasing control
2. Magneto control switch
3. Kohlsman knob
4. Altimeter
5. Radio altimeter
6. Supercharger control
7. Armament master switch
8. Outboard gun switch
9. Inboard gun switch
10. Air speed indicator
11. Radio compass
12. Drift calibration knob
13. Gyro compass
14. Attitude indicator calibration knob
15. Attitude indicator
16. Vertical speed indicator
17. Turn and slip indicator
18. Tachometer
19. Manifold pressure indicator
20. Canopy control lever
21. Canopy lever toggle click-spot
22. Fresh air control knob
23. Defogger control switch
24. Port weapon selector switch
25. Centre weapon selector switch
26. Starboard weapon selector switch
27. RP/ Bomb arming switch
28. RP/ Bomb & Tanks selector switch
29. Gun sight
30. Autopilot control handle

## Cockpit Tour – Centre Pedestal



1. Radio compass
2. Gyro compass
3. Oil pressure indicator
4. Oil temperature indicator
5. Fuel pressure indicator
6. Cylinder head temperature indicator
7. Fuel tank selector lever
8. Accelerometer

9. HVAR firing mode selector switch
10. Main fuel tank contents indicator
11. Fuel pump switch
12. Flight control stick toggle click-spot
13. Bombs & tank firing switch
14. M2 & M3 system firing trigger
15. Ammeter
16. HVAR firing switch

## Cockpit Tour – Port Side



1.  Oil shutter flap control lever
2.  Dive brake control lever
3.  Rudder trim wheel
4.  Elevator trim wheel
5.  Manual bomb/ tank release handle
6.  Tail hook control lever
7.  Landing flap control lever
8.  Aileron trim wheel
9.  Tail wheel locking lever

10. Throttle lever
11. Propeller pitch control lever
12. Mixture lever
13. Hydraulic pressure indicator
14. Landing gear control lever
15. Kohlsman knob
16. Flight control stick toggle click-spot
17. Landing gear status indicator

## Cockpit Tour – Starboard Side
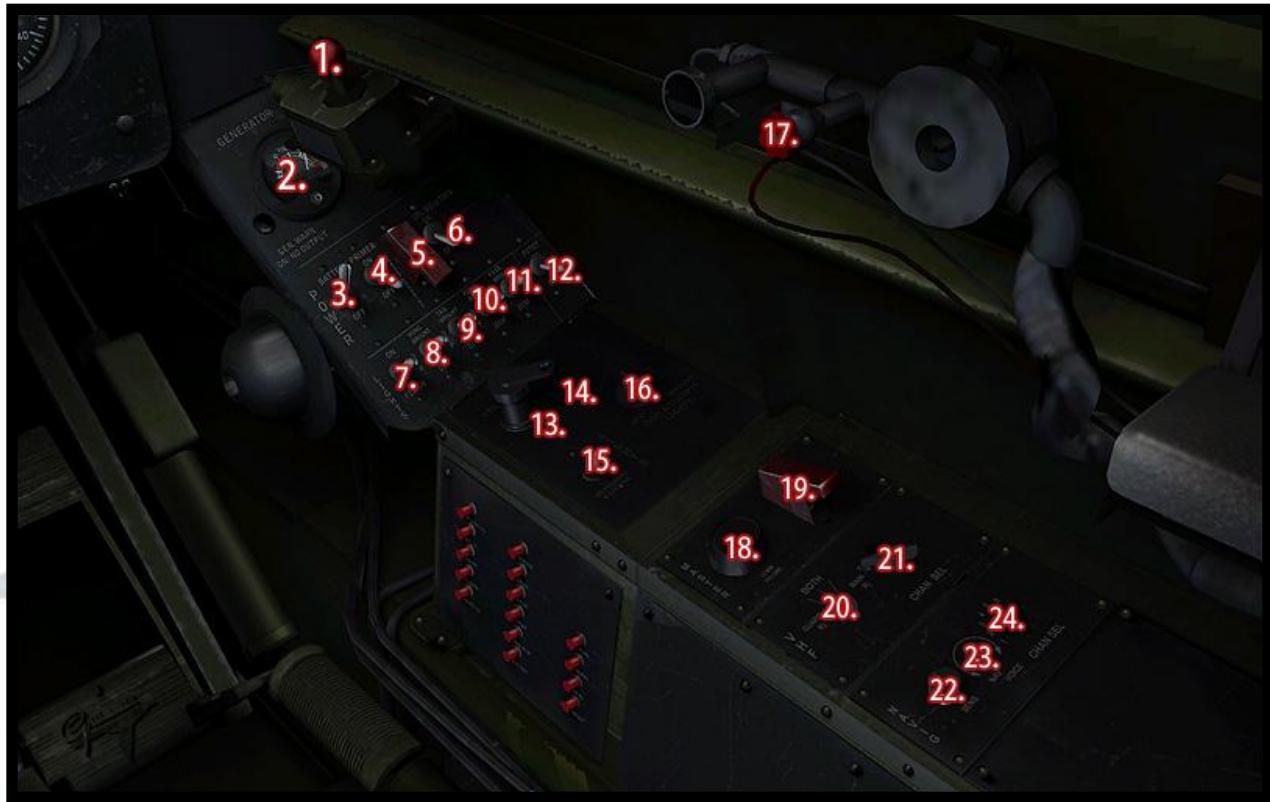


1. Automatic pilot control joystick
2. Ammeter
3. Master battery switch
4. Engine primer switch
5. Engine starter switch
6. Oil diluter control switch
7. Recognition light switch
8. Navigation lights switch
9. Tail light switch
10. Formation lights switch
11. Fuselage lights switch
12. Pitot heater switch
13. Approach light switch
14. Landing light switch
15. Instrument lights switch
16. Cockpit lights switch
17. Oxygen regulator control knob
18. Comm volume master switch
19. Comm system master switch
20. VHF mode selector switch
21. VHF channel selector switch
22. Nav master switch
23. Nav volume control knob
24. Nav channel selector switch

# Systems and Functions

## Configuration Editor

The Bearcat comes with a dynamic configuration editor that will allow many aspects of the aircraft to be configured. Weights and fuel are changed in real-time using the editor, and firing or dropping weapons will also affect the flight dynamics and weights.
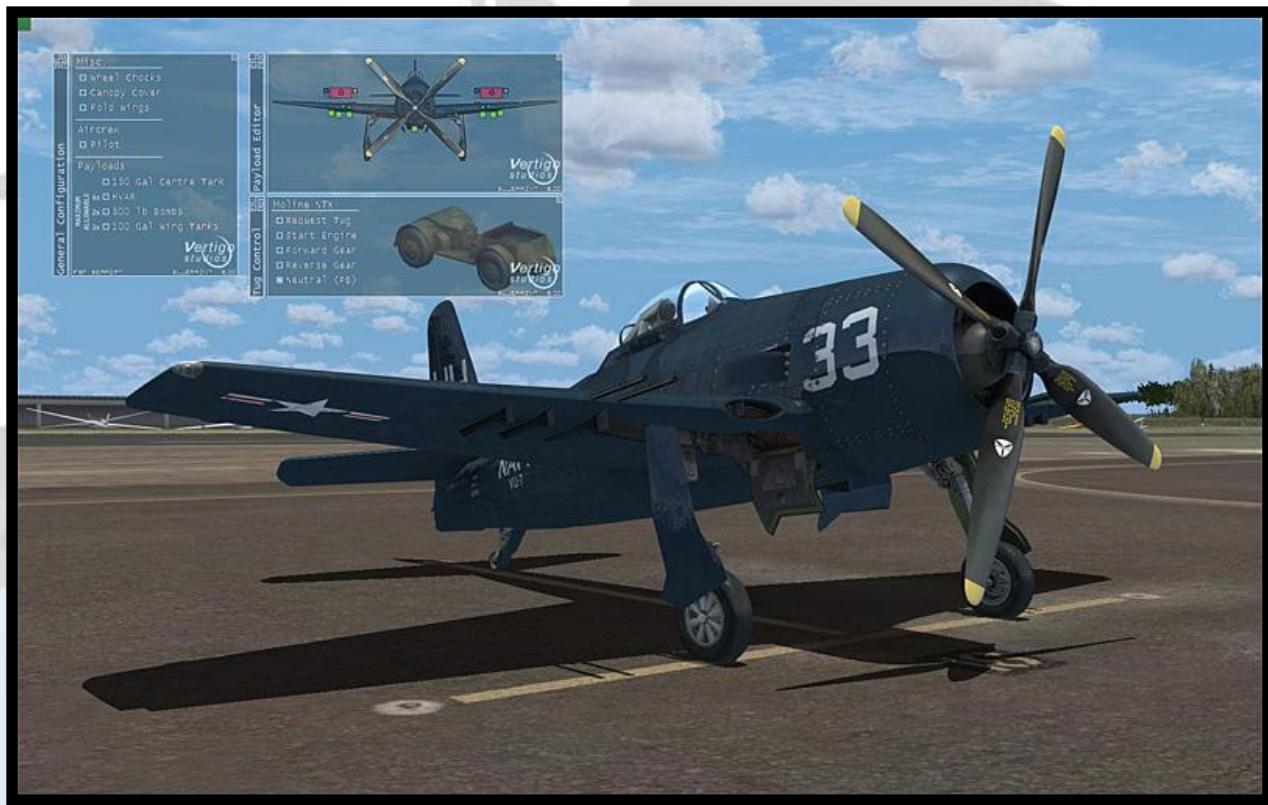


Figure 4 – The editor windows in situ.

## The main configuration-editor window

Pressing ctrl + 4 will display the main window. Below are illustrations and a table documenting the various functions of the editor.

Each option displays a filled-in box when selected, and a transparent box when not.



Figure 5 - No options selected.
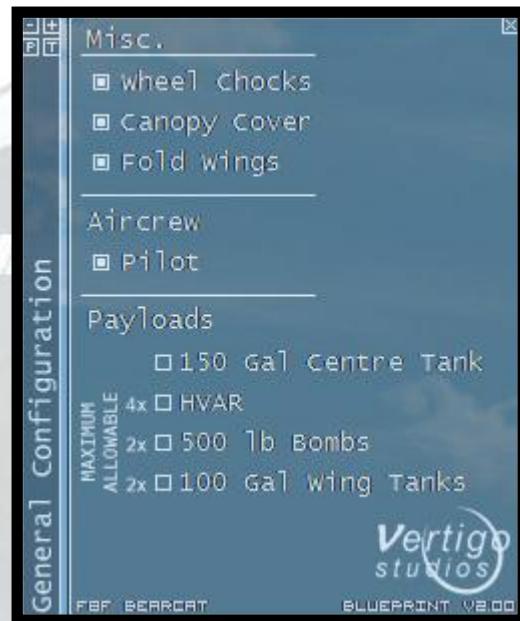


Figure 6 - All but loads selected.

### Control window functions and their descriptions

| | |
|---|---|
|  | Increase window transparency. |
|  | Decrease window transparency. |
|  | Toggle payload editor window (ctrl + 5). |
|  | Toggle Moline NTX tug window (ctrl + 6) |
|  | Toggle wheel chocks. |

| | |
|---|---|
| ☐ Canopy Cover | Toggle canopy cover. |
| ☐ Fold Wings | Toggle wing-fold animation. |
| ☐ Pilot | Toggle pilot. |
| ☐ 150 Gal Centre Tank | Allow selection and configuration of the 150 gallon centre-tank. |
| ☐ HVAR | Allow selection of the aerial-rockets. |
| ☐ 500 lb Bombs | Allow selection of the 500lb bombs. |
| ☐ 100 Gal Wing Tanks | Allow selection and configuration of the 100 gallon wing-tanks. |

## The payload editor window

Pressing ctrl + 5 will display the payload window. From here, weapons can be assigned to their respective pylons, fuel can be added or removed, and ammunition can be adjusted. Please see the below table and illustrations for more information.

The payload editor window should be used in conjunction with the main configuration window. To use, first select the required load object from the configuration window. This will change the state of the payload window, and allow loading of the selected object. For further information, please see the below illustration and table.

### Control window functions and their descriptions

| | | |
|---|---|---|
| | [ – ] | Increase window transparency. |
| | [ + ] | Decrease window transparency. |
| | [ C ] | Toggle configuration window (ctrl + 4). |
| | [ T ] | Toggle Moline NTX tug window (ctrl + 6) |
| | [ ■ ] | Visible in the top-left area of the Flight Simulator window when SimConnect is functioning correctly. |

### Ammunition and the M2 / M3 weapons

The M2 weapons platform is loaded by default in any combat-ready F8F-1. The M3 weapons platform is loaded by default into any combat-ready F8F-2. Ammunition amounts can be controlled used the payload editor window.

Adding ammunition to the aircraft will dynamically alter the weight. Firing the weapons will decrease the weight. Weights are calculated in real-time, on a per-round basis. Each and every round will therefore affect the total performance and weight of the aircraft.

Weights of both weapon and ammunition differ for either the M2 or M3 system. Please see the following table for more information.

**Weapon systems and their respective weights**

| F8F-1 Bearcat | |
|---|---|
| M2 machine gun | 63.93 lbs. per weapon |
| Maximum 525 rounds per weapon | 0.25 lbs. per round |
| **F8F-2 Bearcat** | |
| M3 cannon | 94.13 lbs. per weapon |
| Maximum 413 rounds per weapon | 0.57 lbs. per round |



Figure 7 – The gun control area of the F8F-2 payload window.



Figure 8 – Ammunition control panel.

**The ammunition control panel**

| | |
|---|---|
|  | The box in the centre of the control panel displays the amount of ammunition currently loaded. The background will turn green when the ammunition load is at maximum. |

| | |
|---|---|
|  | Clicking the − symbol will decrease the amount of ammunition loaded. |
|  | Clicking the + symbol will increase the amount of ammunition loaded. |
|  | Clicking the - - symbol on the left side of the display will deplete all ammunition currently loaded. |
|  | Clicking the − symbol on the right side of the display will maximise the ammunition load. |
|  | Weapons can be individually loaded or unloaded using the small boxes beneath the display. Even the small M2 or M3 systems will affect the weight of the aircraft when loaded. |

**150 Gallon Centre Tank**

| | |
|---|---|
|  | First ensure that the 150 gallon centre tank option has been selected. |
|  | Clicking the centre tank graphic will load an empty tank onto the pylon. |

| | |
|---|---|
|  | Fuel can be added using the control panel, which itself functions in a similar fashion to the M2 and M3 control panels. |

## High Velocity Aerial Rockets (HVAR)

| | |
|---|---|
|  | First ensure that the HVAR option has been selected. |
|  | HVAR's can be loaded individually, at a weight of 112 lbs. per rocket. |

## 500 Lbs. Bombs

The 500 Lbs. bombs may only be selected when the 100 gallon wing tanks are not loaded.

| | |
|---|---|
|  | First ensure that the 500 lbs. bomb option has been selected. |
|  | Bombs can be loaded individually, at a weight of around 505 lbs. per bomb. |
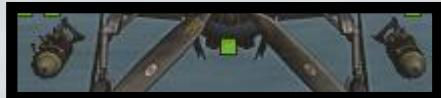
## 100 Gallon Wing Tanks

| | |
|---|---|
|  | First ensure that the 100 gallon wing tank option has been selected. |
|  | Clicking the centre tank graphic will load an empty tank onto the pylon.<br><br>Control is as per the 150 gal. tank. |
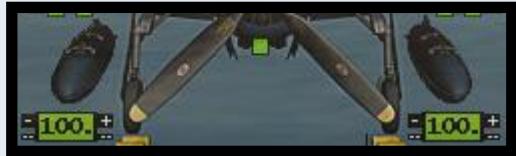
### Individual Pylons

Pylons can be selectively removed in order to streamline the aircraft further. Each pylon has a weight of between 20 and 30 lbs. To remove or replace a pylon, click its respective control point using the payload editor window. When removed, the control box will appear red. Weapons cannot be placed upon the pylon in the removed state.



Figure 9 – All pylon control points are active.

### Smart Payload Configuration Utility

The Bearcat features a 'smart' payload configuration utility in order to make it easier for third-party painters to configure the default model arrangement.

Default load states can be set by the painter in the *aircraft.cfg* file, as per the below table.

Note 1 – 'xx' in the *title text* column suggests the next logical number available in the aircraft.cfg file structure.

| Variant | 'Title=' Text | Function |
|---|---|---|
| F8F-1 Bearcat | title=VS F8F1 xx | Loads M2 weapons. |
| F8F-2 Bearcat | title=VS F8F2 xx | Loads M3 weapons. |
| Clean F8F-1 (Display) | title=VS F8FC xx | Removes all weapons and respective pylons. |

## The Moline NTX tug window

Pressing ctrl + 6 will display the tug control window. From here the Moline NTX tug can be requested or dismissed, and various functions controlled as per the below table.



Figure 10 - The default tug control window.

### Control window functions and their descriptions

| | |
|---|---|
|  | Increase window transparency. |
|  | Decrease window transparency. |
|  | Toggle configuration window (ctrl + 4). |
|  | Toggle payload window (ctrl + 5) |
|  | Click to dismiss or request the NTX. |
|  | Click to start or stop the tug's engine. When starting, the noise of the tug will be heard. |

# Visible Toggle Click-Spots

## Introduction

Parts of the cockpit in the F8F can obstruct operation or view. In order to get around this issue, certain areas of the cockpit act as click-spots in order to toggle visibility of parts.

## Canopy Control

The canopy control unit can obstruct view of the automatic pilot control unit. To toggle visibility, click the area of the bracket above the control unit.



**Figure 11 – Unit hidden.**          **Figure 12 – Unit shown.**
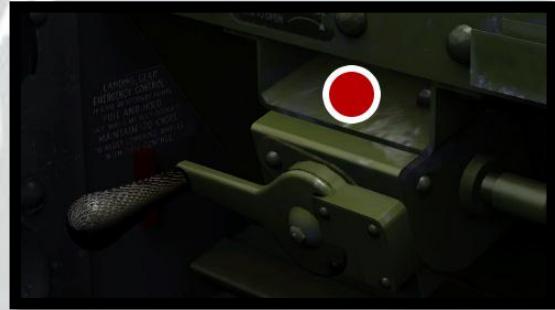
## Flight Control Stick

The flight stick can obstruct view of the centre pedestal. To toggle the stick, click the bracket below the centre pedestal.



Figure 13 – Stick hidden.



Figure 14 – Stick shown.

## Optical Gun-sight

### Introduction

Located atop the main instrument panel, the gun sight forms a centrepiece in the cockpit. To operate the sight, either left or right click on the small scroll wheel located on the forward side of the device.

Right click to progress through the functions, and left click to regress.
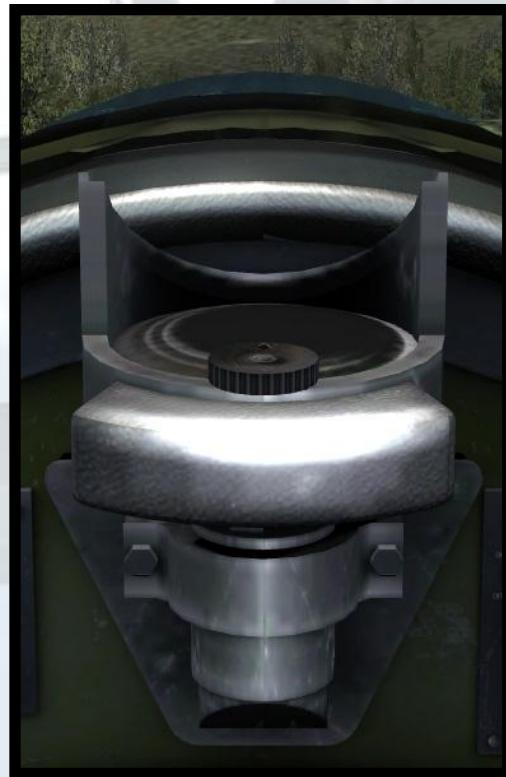
Figure 15 - The gun sight in its default state.

### Collimation and Night Illumination

The gun sight features full night lighting and collimation effects. Moving out of the projection arc will cause the sight to progressively fade from view.

When turned on at night, the gun sight will automatically illuminate.
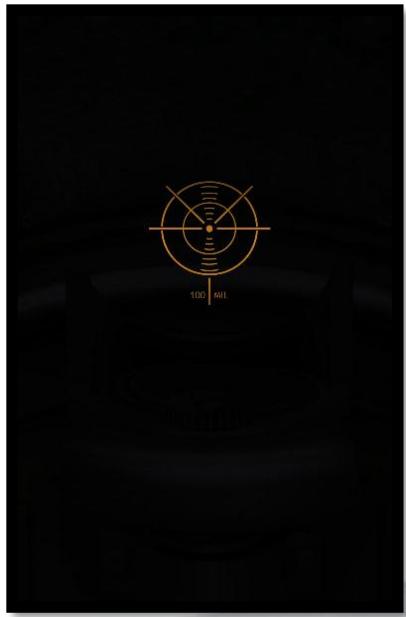
**Figure 16 – Gun sight at night.**



**Figure 17 – Too far right!**
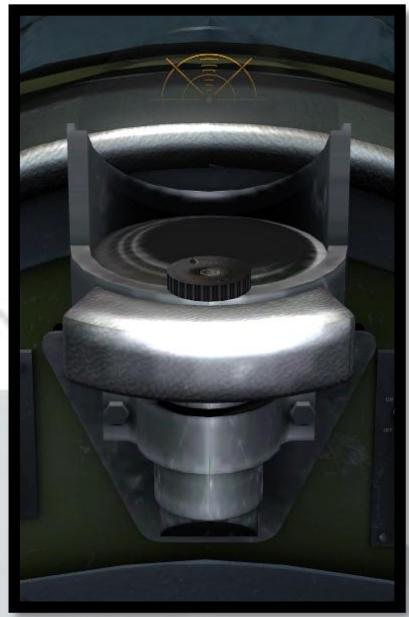


**Figure 18 – Too far up!**

## Function 1



**Figure 19 – Displaying the gunnery sight.**

**Function 2**
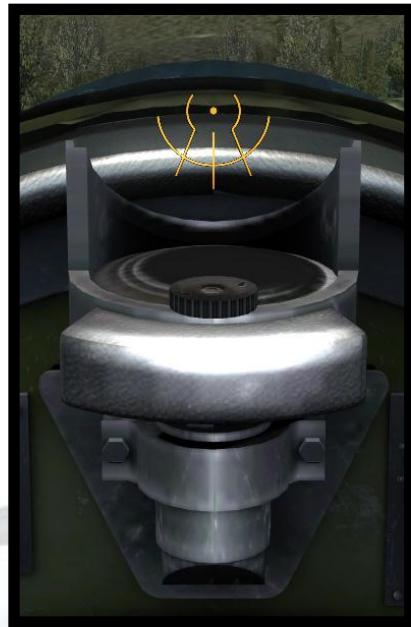


Figure 20 – Displaying the bombing sight.

**Function 3**
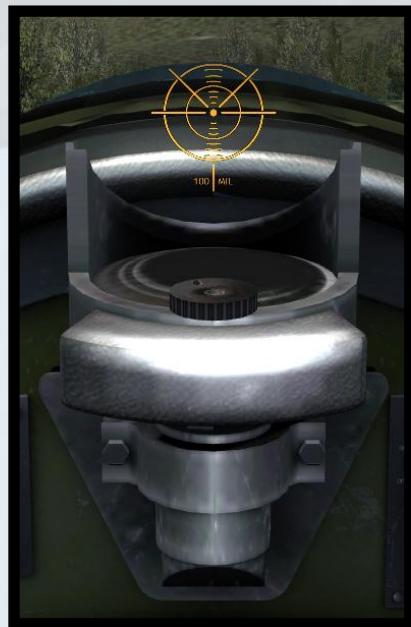


Figure 21 – Displaying the rocket sight.

Manual V1.00/ F8F V1.00

# Weapon Control System

## Introduction

The F8F features a full and complex weapon system. Each and every item assigned to the aircraft using the payload editor can be fired or dropped, along with associated sound and visual effects.

When a weapon is fired or dropped, the resulting weight change will affect the aeroplane immediately. Firing an HVAR salvo causes the aircraft to roll if the pilot is not prepared; dropping the fuel tanks causes the aircraft to pitch up violently if not trimmed correctly.

## M2 Machine Guns and M3 Cannon

### Introduction

The F8F-1′s M2 system and the F8F-2′s M3 system both operate in a similar fashion. The guns cannot be fired if the master switch is turned off or if the ammunition has been depleted. The ammunition load can be manipulated at any time using the payload editor.

Firing the weapons will deplete the ammunition in a realistic way and will of course cause a resultant weight change.

Each weapon has a unique firing sound and realistic muzzle flash effect.

### Arming the weapons

To arm either M2 or M3 system, first raise the red safety toggle and switch the master ON. Individually arm the inboard and outboard weapons, and ensure that ammunition is loaded.

Figure 22 – Guns safe.



Figure 23 – Safety up.



Figure 24 – Master ON.



Figure 25 – Both inboard and outboard ARMED.

## Firing the weapons

To fire the weapons, either mouse-click the trigger on the front-side of the control stick, or press and hold the button or keyboard key assigned to the 'brake' function (most often the trigger of the joystick or controller).

## F8F-1 M2 Firing



Figure 26 - As seen from the outside.



Figure 27  –  Dakka Dakka Dakka.

## F8F-2 M3 Firing



**Figure 28 – Cannon fire from the outside.**



**Figure 29 – Boom boom boom.**

## 500 Lbs. Bombs

### Arming the bombs

The master armament switch must first be armed. This is located on the panel to the left of the gun sight, alongside the inboard and outboard gun selector switches.

| | | | |
|---|---|---|---|
|  |  |  |  |
| Figure 30 – Safety down. | Figure 31 – Master OFF. | Figure 32 – Master ON. | Figure 33 – Safety down. |
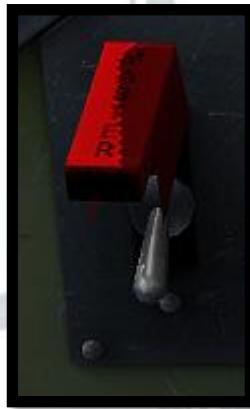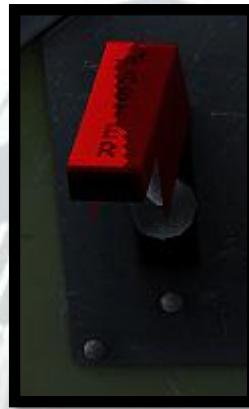
Next, the bomb and tank panel to the right of the gun sight must be configured. Set the left and right selector switches as required, and set the bombs and rocket projectiles switch to 'Tail Arming'. Make sure the lower right selector switch is set to 'RP'.

The system circuits are individual and may be operated individually, or as a pair.

Figure 34 – Weapons safe.          Figure 35 – Both left and right circuits are selected.

## Dropping the bombs

To drop the selected bomb(s), simply click the bomb and tank release trigger atop the flight control stick. The aircraft should lurch as the weapons are released, and a sound effect will be heard.



Figure 36 – Triggers atop the flight stick.

## HVAR's

### Arming the weapons

The master armament switch must first be armed. This is located on the panel to the left of the gun sight, alongside the inboard and outboard gun selector switches.



Figure 37 - Safety down.    Figure 38 - Master OFF.    Figure 39 - Master ON.    Figure 40 - Safety down.
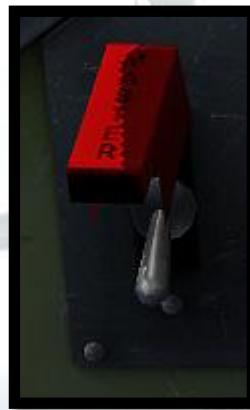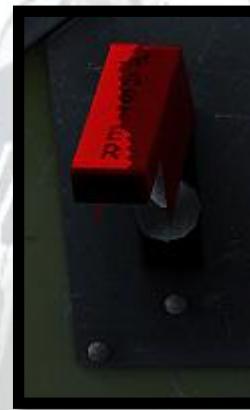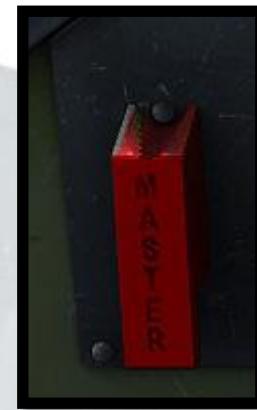
On the Bomb & Tank Selector panel, set 'Bombs & RP' to 'RP Tail Arming' and the lower right selector switch to 'RP'.

The HVAR circuits are all individual and can be controlled using the RP selector switch, located on the centre pedestal.

Figure 41 - Weapons safe.



Figure 42 - Configured for HVAR.

## Firing the weapons – SINGLES

In order to fire the HVAR's in a singular mode; ensure that the selector switch is set to '1' before firing. To progress through the firing circuits, right click the switch.



Figure 43 - HVAR selector set to SINGLE- 1.

To fire, click the trigger on the left of the flight control stick. The aircraft may roll and a sound will be heard upon successful firing.

**Figure 44 – The HVAR trigger is located in the lower left of this image.**

## Firing the weapons – PAIRS

To fire the HVAR's in pairs, all weapons must be intact. The rockets cannot be fired in pairs if the system has already been activated and fired. Set the HVAR selector to '3' in order to activate the PAIRS firing mode; pressing the trigger will fire both port rockets. When both rockets have fired, set the selector to '4' and pull the trigger again to fire both starboard rockets.

# Fuel Tanks

## Arming the armament master system



| | | | |
|---|---|---|---|
| Figure 45 - Safety down. | Figure 46 - Master OFF. | Figure 47 - Master ON. | Figure 48 - Safety down. |
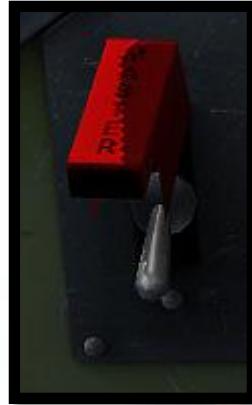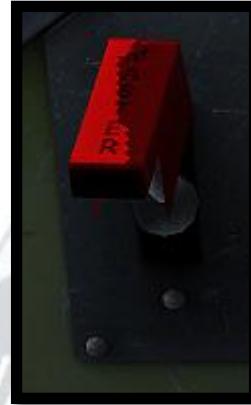
## Arming the system – 150 gallon centre tank



| | |
|---|---|
| Figure 49 - Weapons safe. | Figure 50 - 150 gallon tank selected. |

Using the BTS panel set the selector to 'Bomb & Drop Tanks' and the belly selector to 'ON'.

**Arming the system – 100 gallon wing tanks**



<table>
<tr><td>Figure 51 - Weapons safe.</td><td>Figure 52 – Both 100 gallon tanks selected.</td></tr>
</table>

Using the BTS panel set the selector to 'Bomb & Drop Tanks' and the left and right selector switches as required.

**Dropping the tanks**

To drop the tanks, press the trigger button atop the flight control stick. The aircraft may respond to the rapid change in weight and a latch release sound should be heard.

# Engine Starter System

## Introduction

The F8F features a realistic engine starter system that can be worked correctly, or bypassed easily (using the ctrl + e function).

The propeller will slowly rotate whilst the starter is engaged, whilst the pilot carefully watches the panel. Once the engine is started, different propeller states may be observed.

For advanced starting procedures, please see the drawings at the end of this manual.



**Figure 53 - Low RPM state.**



**Figure 54 - High RPM state.**

# Fuel System

## Introduction

The fuel system controls are located on the lower area of the centre pedestal; hiding the flight control stick allows for better operation of the fuel system.



Figure 55 – The centre pedestal.

## Fuel Selector Control

The fuel selector is located to the left of the centre pedestal. Tanks may be selected even when they are not attached to the aircraft.

Right click the control to cycle clockwise through the tank selections. Similarly, left click to cycle anti-clockwise.



Figure 56 – The fuel selector control.

## Fuel Pump

An electrical fuel pump switch is located to the bottom right of the centre pedestal. Providing the battery is switched on and functioning, the electric pump will provide extra pressure to the fuel system.



Figure 57 – The fuel pump switch panel.

## Fuel Contents Gauge

The fuel contents gauge will only display the contents of the main aeroplane fuel tank. It does not show a cumulative amount nor does it display external tank values.



Figure 58 – The main tank contents gauge.

# Defogger System

## Operation

The defogger unit is located atop the right side of the dashboard coaming. Clicking the main switch will turn the unit on or off. When turned on, the unit will emit a sound for a while before settling into normal operation.



Figure 59 – The unit atop the coaming.

## Canopy Fogging

The canopy is prone to fogging when operating in low ambient temperatures or when the cockpit temperature differs greatly to that of the outside.

The defogger should be operated during routine flight or as is required.

When fogging occurs, the windscreen and canopy will gradually become less transparent. Once the defogger unit is turned on, the system will require time to complete its task. The longer the system is turned off and the greater the temperature difference, the greater the amount of time required for the system to clear the issue.

Figure 60 – A problem develops.



Figure 61 – As seen on from the outside.

## Automatic Pilot Unit

### Introduction

The F8F features a rudimentary but functional automatic pilot unit. Located beneath the canopy control unit, the autopilot features two main controls- a switch and a knob.



Figure 62 - The automatic pilot.

### Operation

To engage or disengage the autopilot, either use the assigned key press or click the switch on the rear side of the unit. Once engaged, the autopilot functions on all axes.

To control roll, left or right click the red control knob to roll left or right respectively.

To control pitch, scroll the mouse wheel forwards or backwards to dive or climb respectively.

## Canopy Control Unit

### Introduction

The canopy control is hidden by default, but may be toggled using the visibility click spot described at the beginning of this section.

### Operation

The canopy may be operated by using either the key command or by clicking the control lever. The canopy should be locked by clicking the grey knob underneath the canopy railing (starboard side). When locked, operation of the canopy is prohibited.



Figure 63 – The control unit, with locking knob to the lower right.

# Oil Cooler Flap System

## Operation

The oil cooler should be opened when the aeroplane is on the ground, or when the engine oil temperature rises above an acceptable temperature.

The operation lever is located on the rear left console. The F8F-1 does not feature the oil cooler flaps on the external fuselage, though the lever is still present.



**Figure 64 – The lever.**



**Figure 65 - Flaps open on an F8F-2**

# Cowl Flap System

## Introduction

The F8F features a unique cowl flap control system. Operation of the cowl flaps is generally automatic, though it can be controlled by the pilot.

To operate the cowl switch, right click to cycle forward through the functions, or left click to cycle backward.

The cowl flaps control switch is located on the lower centre of the main instrument panel.



Figure 66 – The cowl flap system switch.

## OFF

Switching the cowl flap system to OFF will allow full pilot control using the predefined keyboard commands. By default the cowl flaps will remain in whatever position they were prior to the system being turned off.

## AUTO

Switching the cowl flap system to AUTO will let the aeroplane control the flaps automatically. The cowl flaps will as the cylinder head temperature rises, or if the aircraft is on the ground. The system should be set to AUTO in normal conditions.

## MANUAL - OPEN

Switching the system to OPEN will fully open the cowl flaps.

## MANUAL- CLOSE

Switching the system to CLOSE will fully close the cowl flaps.
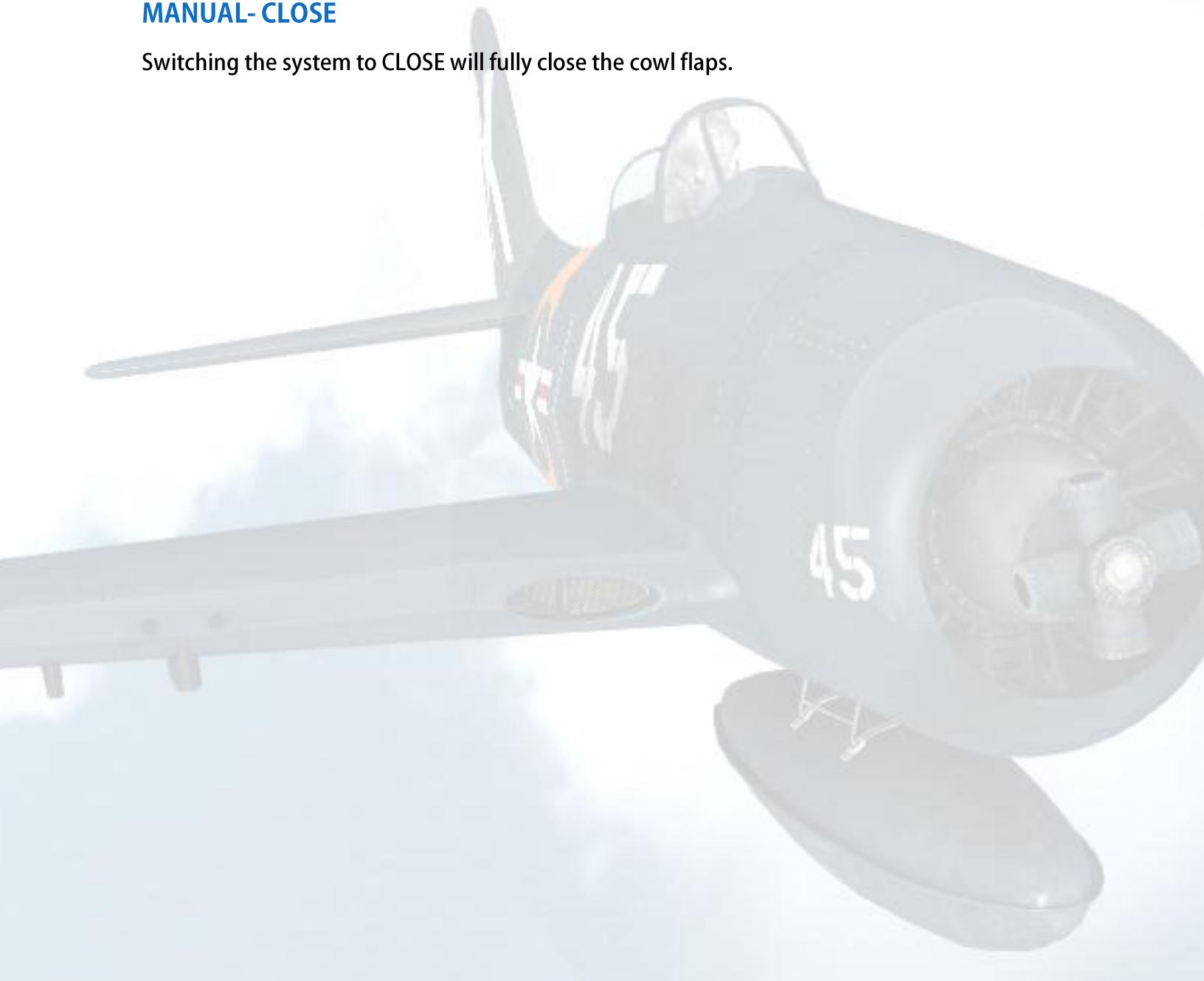
# Trim Systems

## Introduction

All flight surfaces of the F8F can be trimmed. The trim control wheels are located on the left console panel.
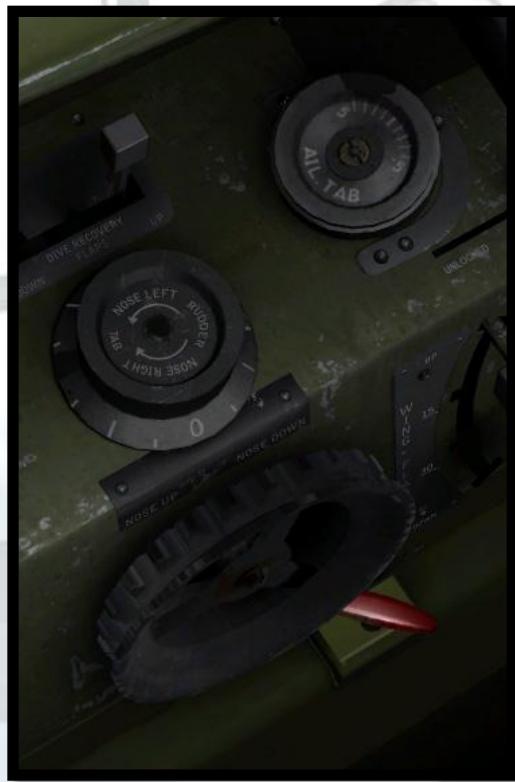


Figure 67 - From top to bottom; elevator, rudder and aileron trim wheels.

## Operation

All trim wheels can be operated using the mouse wheel or by clicking and dragging in the required direction.

Rolling the mouse wheel forward will increase or move the trim clockwise. The opposite is true when the mouse wheel is rolled backward.

# Lighting Systems

## Introduction

The F8F features a complex array of lights, all of which may be individually controlled. All lights are located on the forward section of the right console.



Figure 68 - Lighting control panel, with cockpit lights to the lower right.

## Operation

Simply click a light switch to toggle the relevant light. The F8F features recognition, navigation, formation, instrument and cockpit flood lights.

## Night Lighting

The F8F features individual night lighting in the cockpit. Using the controls to the rear of the lighting control panel, both the instrument and cockpit lights may be individually controlled.



Figure 69 – Both the instrument and cockpit lights turned on at night.

## Tail Hook

### Operation

The tail hook can be deployed or retracted by clicking the lever located towards the floor panel of the left console. The hook may not deploy fully if the aeroplane is already on the ground.



**Figure 70 – Tail hook lever.**



**Figure 71 – Hook fully deployed.**

## Landing Flaps

### Operation

The landing flap control lever is located on the side wall of the left console. Click the lever to set the required flap setting. Alternatively use the predefined flap keys.



**Figure 72 – Flap control lever.**

### External Visual Aid

Flap setting can be verified by looking at the leading section of the flap. The relevant markings are clearly defined along the rounded edge.
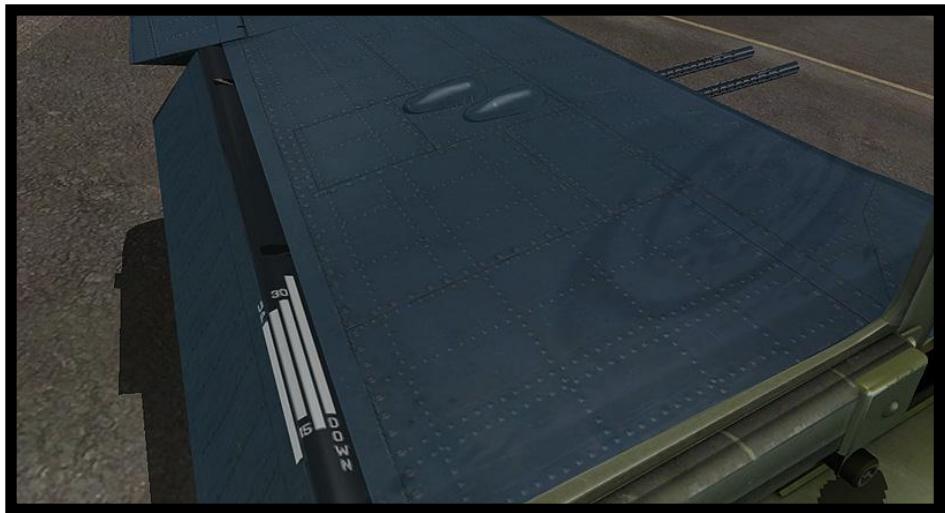
**Figure 73 – External flap markings.**

## Official Drawings

### Introduction

Over the next few pages are drawings that contain data applicable to all models of Bearcat in this package. The images are taken from the real-world flight manuals. The images are therefore the copyright of their respective owners.
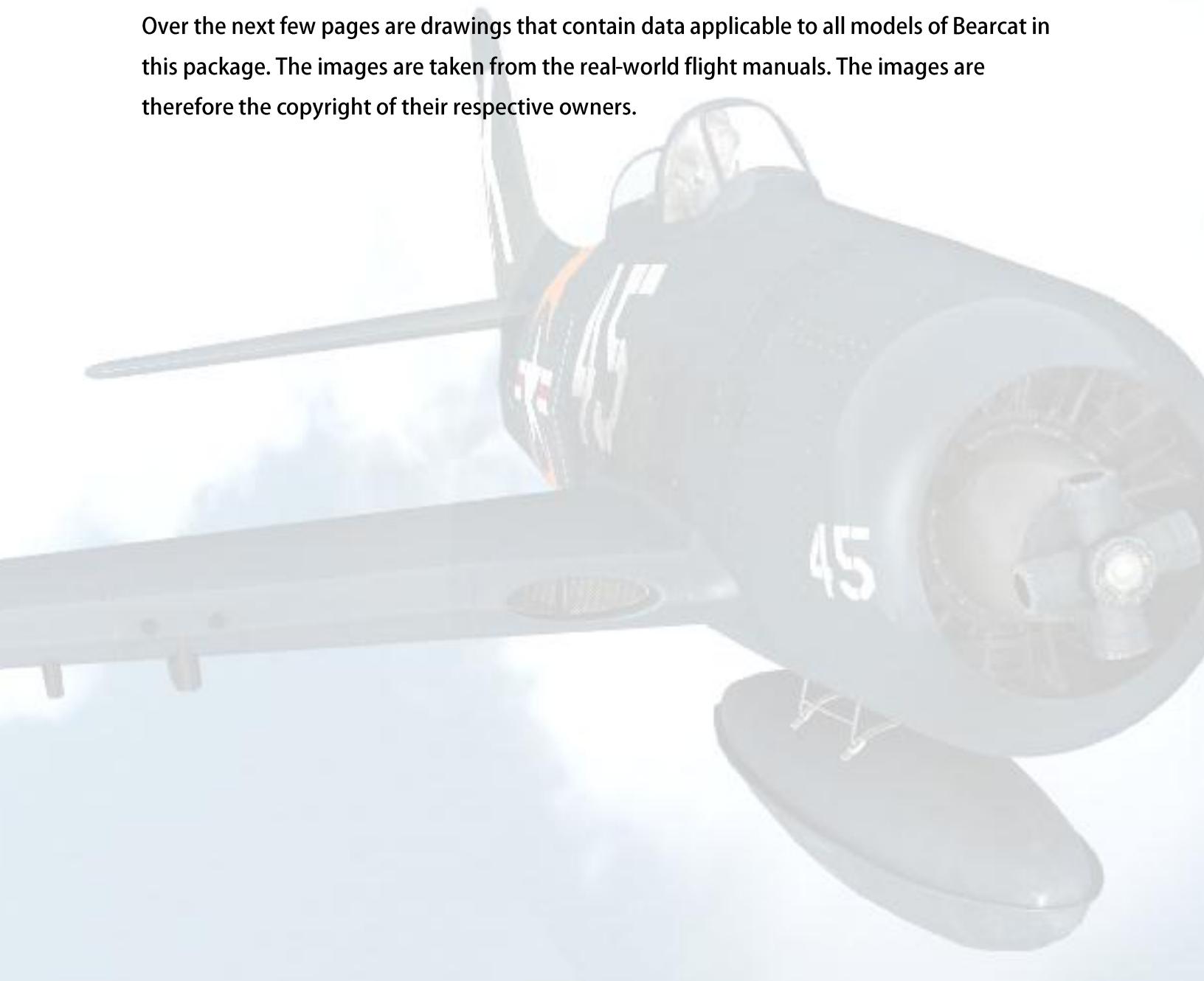
## Normal Operating Procedures & Checklists

The following flight manoeuvres are prohibited:

- Prolonged spin

- Inverted spin

The following manoeuvres are prohibited when carrying external stores :

- Any Spin

- Snap Roll

- Immelman turn

- Loop

- Chandelle

- Inverted flight (except when entering dives)

### Before entering the cockpit.

- *Take-off gross weight and balance.*

    - Check gross weight and centre of gravity location for take-off and for anticipated landing condition.

- *Exterior check.*

    - Make sure the airplane has been serviced with proper quantities of fuel, oil, water injection fluid, hydraulic fluid and oxygen.

    - 

### Upon entering the cockpit.

- *Standard check for all flights*

    - Landing gear locked and down

    - Ignition switch off

    - Wheels chocked

    - Automatic pilot control "OFF", check stick and rudder pedals for freedom and full throw, watch control surfaces.
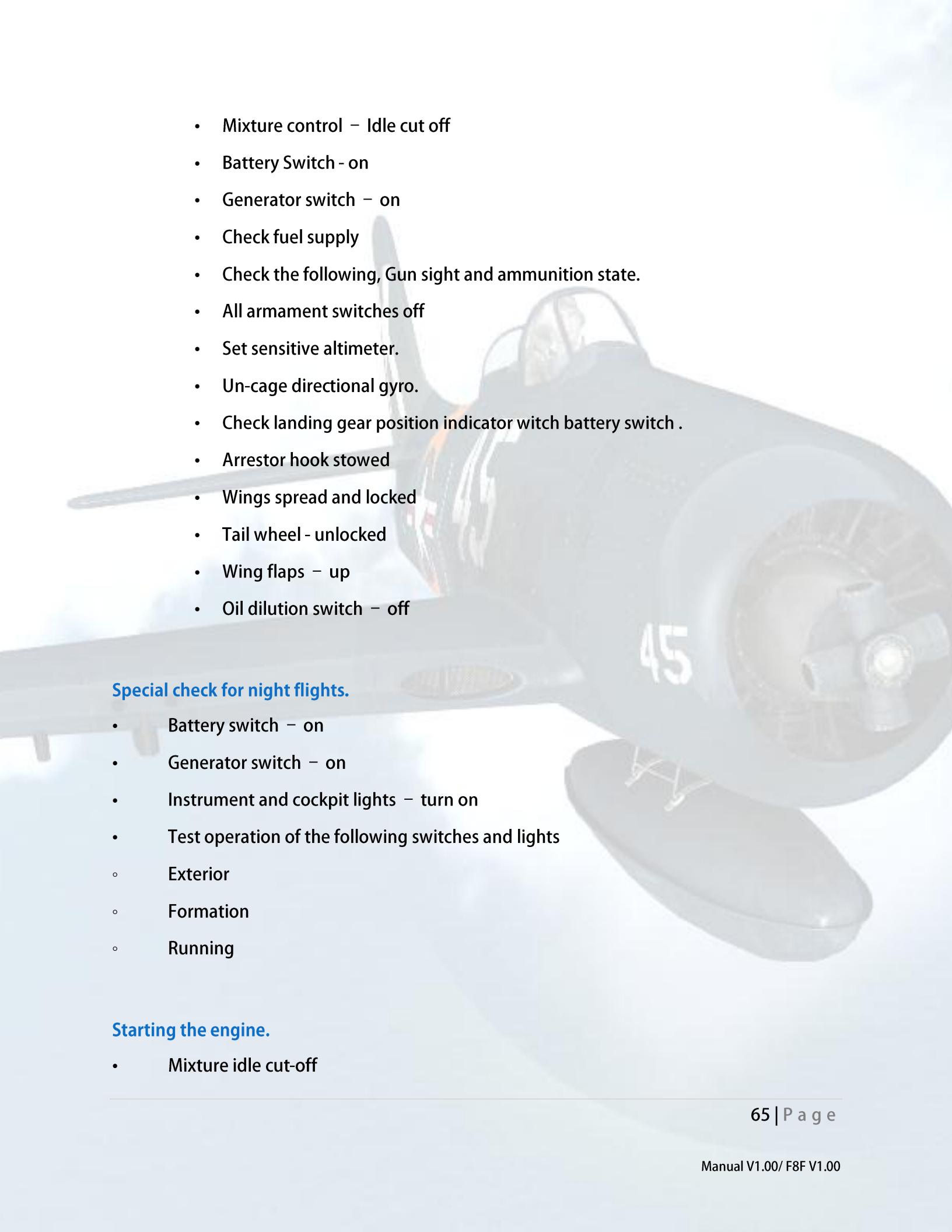
- Mixture control – Idle cut off

- Battery Switch - on

- Generator switch – on

- Check fuel supply

- Check the following, Gun sight and ammunition state.

- All armament switches off

- Set sensitive altimeter.

- Un-cage directional gyro.

- Check landing gear position indicator witch battery switch .

- Arrestor hook stowed

- Wings spread and locked

- Tail wheel - unlocked

- Wing flaps – up

- Oil dilution switch – off

**Special check for night flights.**

- Battery switch – on

- Generator switch – on

- Instrument and cockpit lights – turn on

- Test operation of the following switches and lights

◦ Exterior

◦ Formation

◦ Running

**Starting the engine.**

- Mixture idle cut-off

- Fuel tank selector – main

- Propeller control – full

- Throttle – one inch open

- Cowl flaps – auto

- Battery switch - on

- Generator switch – on (leave on at all times except emergency

- Auxiliary fuel pump switch – on

- Ignition switch – both

- Starter switch – on

## Taxiing instructions.

- Taxi with the tail wheel unlocked except in strong winds. A steady run of the engine is preferable to repeated short bursts of power.

- Use brakes to adequate directional control though rudder will be found to be moderately effective. Do not build up to much speed while taxiing in order to maintain proper braking action.

## Take off.

- With external load items mounted on the wings, an unbalanced load condition of 250 pounds must be exceeded on account of marginal to unsatisfactory control characteristics at low speeds with a greater amount of unbalance.

- *Check off list*

◦ Wings spread

◦ Canopy open

◦ Obtain traffic clearance

◦ Cowl flaps as required

◦ Propeller – full
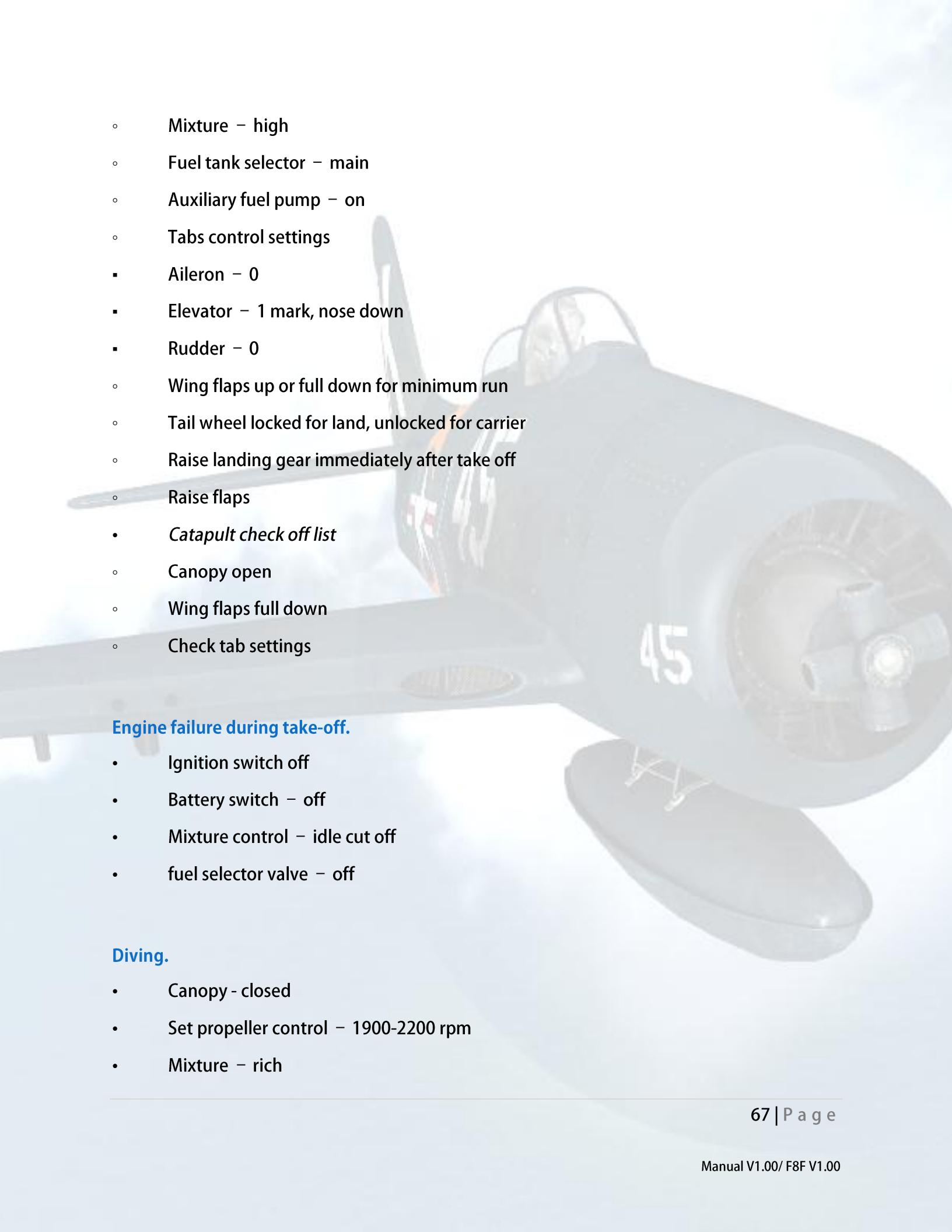
- ◦ Mixture – high
- ◦ Fuel tank selector – main
- ◦ Auxiliary fuel pump – on
- ◦ Tabs control settings
  - ▪ Aileron – 0
  - ▪ Elevator – 1 mark, nose down
  - ▪ Rudder – 0
- ◦ Wing flaps up or full down for minimum run
- ◦ Tail wheel locked for land, unlocked for carrier
- ◦ Raise landing gear immediately after take off
- ◦ Raise flaps
- • *Catapult check off list*
- ◦ Canopy open
- ◦ Wing flaps full down
- ◦ Check tab settings

## Engine failure during take-off.

- • Ignition switch off
- • Battery switch – off
- • Mixture control – idle cut off
- • fuel selector valve – off

## Diving.

- • Canopy - closed
- • Set propeller control – 1900-2200 rpm
- • Mixture – rich

- Fuel selector – main tank

- Cowl flaps – closed

- Oil cooler shutters - closed


**Approach and landing.**

- Canopy – open

- Tab control settings

◦ Aileron – 0

◦ Elevator – 3 nose up

◦ Rudder – 0

- Auxiliary fuel pump – on

- Tank selector – main

- Mixture control – rich

- Propeller control – 2400-2600 rpm

- Cowl flaps as required

- Oil cooler shutters as required

- Tail wheel – locked

- Armament master switch – off

- Landing gear down

- Wing flaps – full down

- Arresting hook – extended (carrier)

- NOTE: External fuselage load greater than 1100 lb must be dropped before carrier landing. Also, when arrested landings are made with external wing loads, fuselage loads greater than an empty tank must be dropped. Arrested landings with wing loads greater than 500 lb per side are not permitted.

### Normal landing.

- The recommended approach for a land landing should be made at from 10 to 20 knots above stalling speed and with sufficient power to maintain a 500 to 1000 ft minimum rate of descent. This results in a moderate glide and ample speed for the flare out. Approaches made with the canopy open result in a slight loss in rudder effectiveness at small rudder deflections. The elevator is extremely effective in the approach and flare put. And when coupled with the moderately light forces, it Is very easy to over control. During the touch down and ensuing ground run tendency to drop a wing or to swing is evident.

### Cross wind landing.

- Landings have been made satisfactorily in 90 degree cross winds up to 50 mph. These can be made using the crabbing, lowering the wing, or angular approach technique or a combination of these methods. If runway length permits a wheel-type landing is recommended.

### Minimum run landing.

- Due to the relatively large flap area and light weight of the airplane, the usual landing run without braking is short. However, for a minimum run landing, the approach should be made with power at the power-off stalling speed followed by a full stall (3 point) landing. As the braking power it not excessive, the brakes can be applied vigorously after ground contact is made.

### Stopping the engine.

- Propeller – Full increase rpm
- Operate engine at 1000-1200 rpm for 30 seconds
- Auxiliary fuel pump – off
- Mixture control – idle cut-off
- Ignition switch – off
- Battery switch – off
- Cowl flaps – open

**Before leaving the cockpit.**

•        Check all the switches are in the off position except the generator switch.

# Reference Charts

**RESTRICTED**
**AN 01-85FD-1**



Figure 68—Stalling Speed (Power Off)—F8F-1
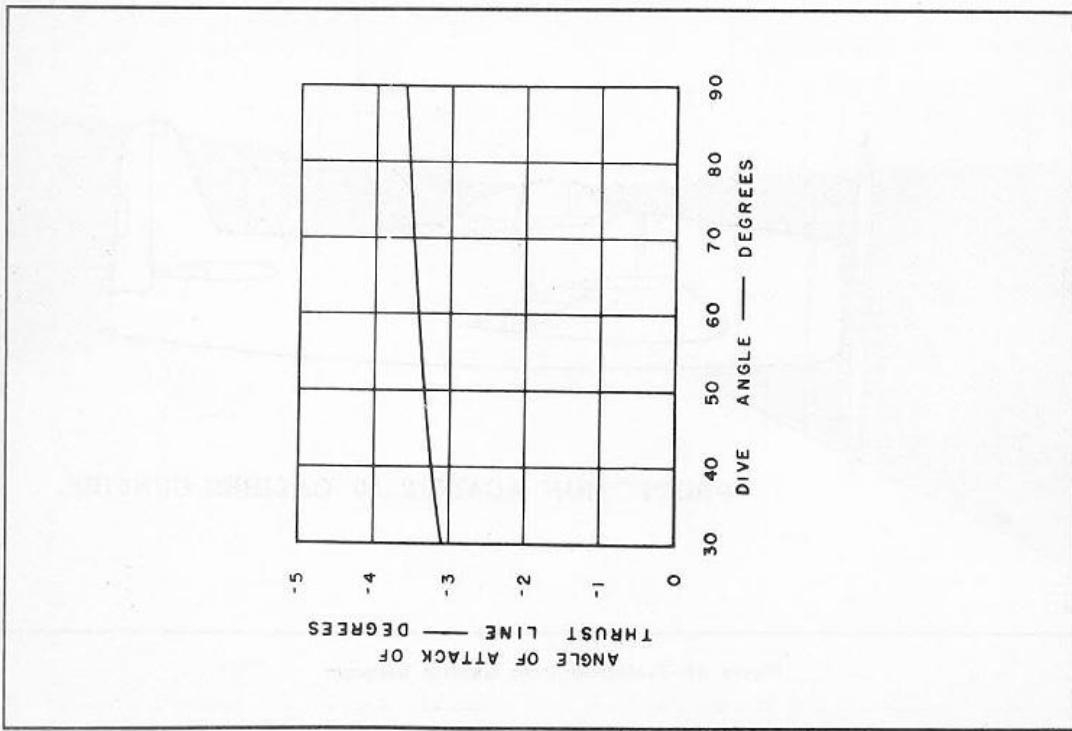


Figure 67—Dive Angle vs. Angle of Attack of Thrust Line—F8F-1

**RESTRICTED**
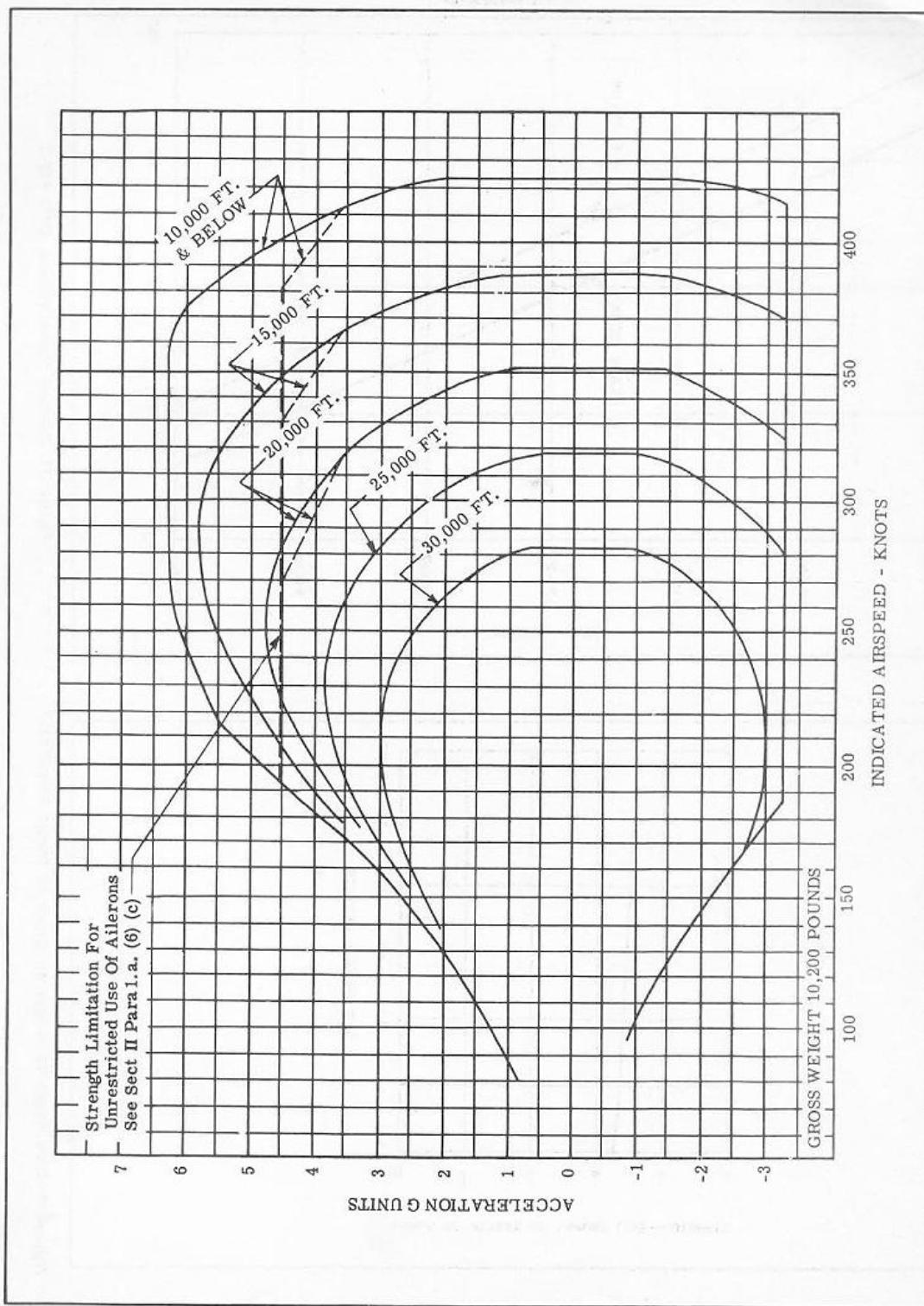
Figure 69—Operating Flight Strength Diagram Models F8F-1, -1B, -1N, -2, -2N, and -2P Airplanes

Appendix I

**RESTRICTED**
**AN 01-85FD-1**
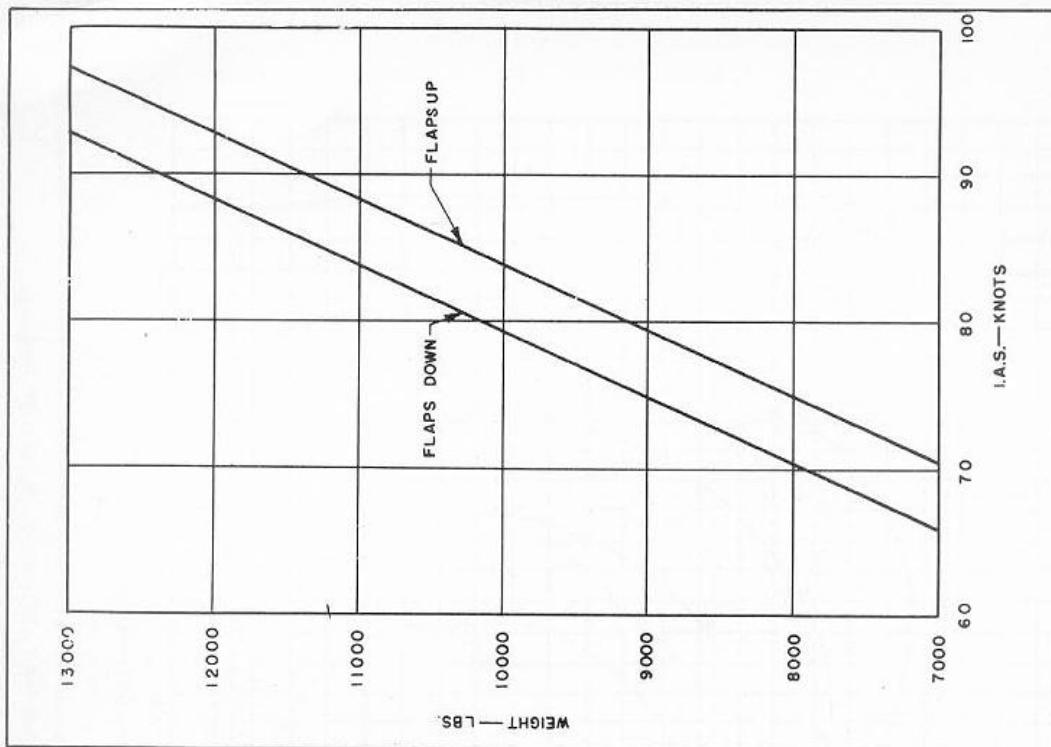


Figure 71—Stalling Speed (Power Off)—F8F-2
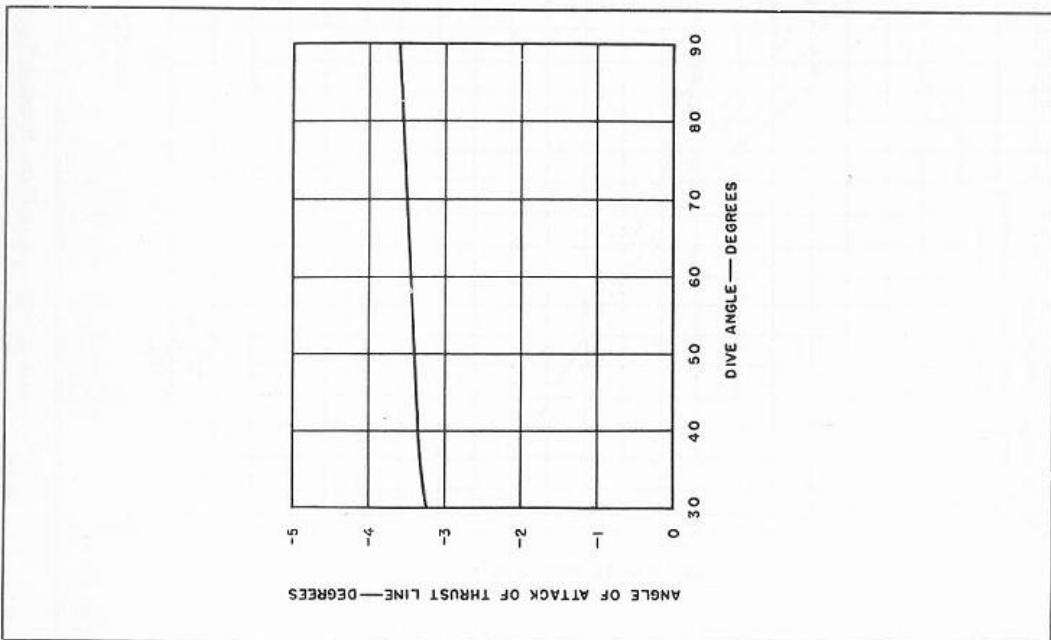


Figure 70—Dive Angle vs. Angle of Attack of Thrust Line—F8F-2

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Appendix I of this publication shall not be carried in aircraft on combat missions or when there is a reasonable chance of its falling into the hands of the enemy.

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AN 01-85FD-1

Appendix I

# TAKE-OFF, CLIMB & LANDING CHART

**AIRCRAFT MODEL(S) F8F-1**     **ENGINE MODEL(S) R-2800-34W**

## TAKE-OFF DISTANCE — FEET

### HARD SURFACE RUNWAY

| GROSS WEIGHT LB. | HEAD WIND M.P.H. | HEAD WIND KTS. | AT SEA LEVEL GROUND RUN | AT SEA LEVEL TO CLEAR 50' OBJ. | AT 3000 FEET GROUND RUN | AT 3000 FEET TO CLEAR 50' OBJ. | AT 6000 FEET GROUND RUN | AT 6000 FEET TO CLEAR 50' OBJ. |
|---|---|---|---|---|---|---|---|---|
| 9215 | 0 | 0 | 436 | 747 | 536 | 907 | 618 | 1071 |
|  | 17 | 15 | 279 | 478 | 352 | 596 | 414 | 718 |
|  | 34 | 30 | 149 | 255 | 197 | 333 | 241 | 418 |
|  | 51 | 45 | 60 | 103 | 86 | 145 | 111 | 193 |
| 10879 1-150 GAL. DROP TANK | 0 | 0 | 656 | 1109 | 814 | 1361 | 1010 | 1682 |
|  | 17 | 15 | 439 | 743 | 557 | 932 | 706 | 1178 |
|  | 34 | 30 | 257 | 434 | 336 | 561 | 439 | 731 |
|  | 51 | 45 | 120 | 203 | 195 | 327 | 232 | 387 |

### SOD-TURF RUNWAY

| GROSS WEIGHT LB. | AT SEA LEVEL GROUND RUN | AT SEA LEVEL TO CLEAR 50' OBJ. | AT 3000 FEET GROUND RUN | AT 3000 FEET TO CLEAR 50' OBJ. | AT 6000 FEET GROUND RUN | AT 6000 FEET TO CLEAR 50' OBJ. |
|---|---|---|---|---|---|---|
| 9215 | 447 | 758 | 550 | 921 | 670 | 1123 |
|  | 286 | 485 | 362 | 605 | 449 | 753 |
|  | 153 | 258 | 202 | 348 | 262 | 438 |
|  | 71 | 105 | 88 | 148 | 122 | 202 |
| 10879 | 670 | 1123 | 837 | 1384 | 1042 | 1714 |
|  | 449 | 753 | 573 | 949 | 730 | 1200 |
|  | 273 | 441 | 346 | 572 | 453 | 746 |
|  | 123 | 206 | 201 | 332 | 240 | 394 |

### SOFT SURFACE RUNWAY

| GROSS WEIGHT LB. | AT SEA LEVEL GROUND RUN | AT SEA LEVEL TO CLEAR 50' OBJ. | AT 3000 FEET GROUND RUN | AT 3000 FEET TO CLEAR 50' OBJ. | AT 6000 FEET GROUND RUN | AT 6000 FEET TO CLEAR 50' OBJ. |
|---|---|---|---|---|---|---|
| 9215 | 470 | 781 | 578 | 949 | 723 | 1176 |
|  | 301 | 500 | 380 | 623 | 484 | 788 |
|  | 161 | 266 | 212 | 348 | 282 | 459 |
|  | 65 | 108 | 92 | 152 | 130 | 222 |
| 10879 | 714 | 1167 | 886 | 1433 | 1129 | 1801 |
|  | 479 | 780 | 606 | 981 | 790 | 1261 |
|  | 280 | 457 | 366 | 590 | 491 | 784 |
|  | 131 | 214 | 213 | 344 | 260 | 414 |

NOTE: INCREASE CHART DISTANCES AS FOLLOWS: 75°F + 10%; 100°F + 20%; 125°F + 30%; 150°F + 40%

OPTIMUM TAKE-OFF WITH ___ RPM, ___ IN.HG, & ___ DEG. FLAP IS 80% OF CHART VALUES

## CLIMB DATA

| GROSS WEIGHT LB. | AT SEA LEVEL BEST I.A.S. MPH | AT SEA LEVEL BEST I.A.S. KTS | AT SEA LEVEL RATE OF CLIMB F.P.M. | AT SEA LEVEL GAL. OF FUEL USED | AT 5000 FEET BEST I.A.S. MPH | AT 5000 FEET BEST I.A.S. KTS | AT 5000 FEET RATE OF CLIMB F.P.M. | AT 5000 FEET FROM SEA LEVEL TIME MIN. | AT 5000 FEET FROM SEA LEVEL FUEL USED | AT 10,000 FEET BEST I.A.S. MPH | AT 10,000 FEET BEST I.A.S. KTS | AT 10,000 FEET RATE OF CLIMB F.P.M. | AT 10,000 FEET FROM SEA LEVEL TIME MIN. | AT 10,000 FEET FROM SEA LEVEL FUEL USED | AT 15,000 FEET BEST I.A.S. MPH | AT 15,000 FEET BEST I.A.S. KTS | AT 15,000 FEET RATE OF CLIMB F.P.M. | AT 15,000 FEET FROM SEA LEVEL TIME MIN. | AT 15,000 FEET FROM SEA LEVEL FUEL USED | AT 20,000 FEET BEST I.A.S. MPH | AT 20,000 FEET BEST I.A.S. KTS | AT 20,000 FEET RATE OF CLIMB F.P.M. | AT 20,000 FEET FROM SEA LEVEL TIME MIN. | AT 20,000 FEET FROM SEA LEVEL FUEL USED | AT 25,000 FEET BEST I.A.S. MPH | AT 25,000 FEET BEST I.A.S. KTS | AT 25,000 FEET RATE OF CLIMB F.P.M. | AT 25,000 FEET FROM SEA LEVEL TIME MIN. | AT 25,000 FEET FROM SEA LEVEL FUEL USED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9215 | 177 | 154 | 4050 | 14 | 192 | 167 | 4000 | 1.00 | 18 | 200 | 174 | 3700 | 2.13 | 21 | 210 | 182 | 3390 | 3.36 | 27 | 215 | 187 | 3080 | 4.8 | 31 | 220 | 191 | 2250 | 6.6 | 35 |
| 10879 | 177 | 154 | 3100 | 14 | 192 | 167 | 3080 | 1.25 | 19 | 200 | 174 | 2900 | 2.65 | 23 | 210 | 182 | 2530 | 4.21 | 29 | 215 | 187 | 2240 | 6.1 | 35 | 220 | 191 | 1500 | 8.4 | 41 |

FUEL USED (U.S. GAL.) INCLUDES WARM-UP & TAKE-OFF ALLOWANCE

POWER PLANT SETTINGS: (DETAILS ON FIG. ___ SECTION III):

## LANDING DISTANCE — FEET

| GROSS WEIGHT LB. | BEST IAS APPROACH POWER OFF MPH | BEST IAS APPROACH POWER OFF KTS | BEST IAS APPROACH POWER ON MPH | BEST IAS APPROACH POWER ON KTS | HARD DRY SURFACE AT SEA LEVEL GROUND ROLL | HARD DRY SURFACE AT SEA LEVEL TO CLEAR 50' OBJ. | HARD DRY SURFACE AT 3000 FEET GROUND ROLL | HARD DRY SURFACE AT 3000 FEET TO CLEAR 50' OBJ. | HARD DRY SURFACE AT 6000 FEET GROUND ROLL | HARD DRY SURFACE AT 6000 FEET TO CLEAR 50' OBJ. | FIRM DRY SOD AT SEA LEVEL GROUND ROLL | FIRM DRY SOD AT SEA LEVEL TO CLEAR 50' OBJ. | FIRM DRY SOD AT 3000 FEET GROUND ROLL | FIRM DRY SOD AT 3000 FEET TO CLEAR 50' OBJ. | FIRM DRY SOD AT 6000 FEET GROUND ROLL | FIRM DRY SOD AT 6000 FEET TO CLEAR 50' OBJ. | WET OR SLIPPERY AT SEA LEVEL GROUND ROLL | WET OR SLIPPERY AT SEA LEVEL TO CLEAR 50' OBJ. | WET OR SLIPPERY AT 3000 FEET GROUND ROLL | WET OR SLIPPERY AT 3000 FEET TO CLEAR 50' OBJ. | WET OR SLIPPERY AT 6000 FEET GROUND ROLL | WET OR SLIPPERY AT 6000 FEET TO CLEAR 50' OBJ. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

OPTIMUM LANDING IS 80% OF CHART VALUES

**LEGEND**
I.A.S. : INDICATED AIRSPEED
M.P.H. : MILES PER HOUR
KTS. : KNOTS
F.P.M. : FEET PER MINUTE

NOTE: TO DETERMINE FUEL CONSUMPTION IN BRITISH IMPERIAL GALLONS, MULTIPLY BY 10, THEN DIVIDE BY 12.

DATA AS OF / BASED ON:

REMARKS:

AAFMC-527   8-1-44

*Figure 72—Take Off, Climb and Landing Chart*
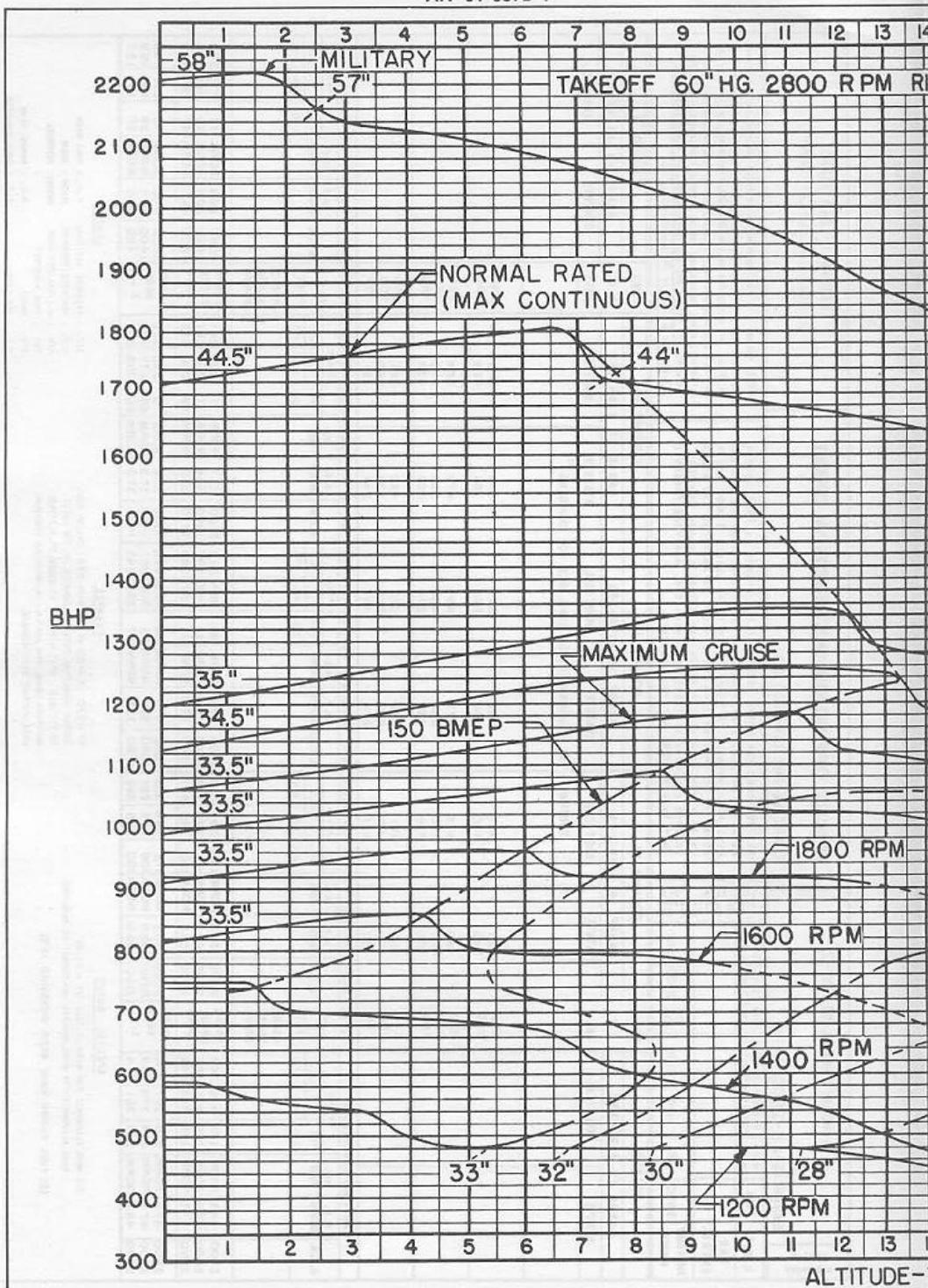
Figure 74—Engine Calibration Curves—F8F-2—R-2800-30W

R-2800-30W
OPERATING LIMITS CHART

FUEL GRADE 115/145, AN-F-28. BASED ON
A.E.L. CALIBRATION 6-29-48.
USE NORMAL FUEL MIXTURE EXCEPT AS
NOTED UNLESS CYL TEMP EXCEEDS
LIMITS, THEN USE RICH.
PROP GEAR RATIO — 4.50:1
COMPRESSION RATIO — 6.75:1
IMPELLER GEAR RATIO, LOW-INTER-HIGH
7.29    9.15    10.55

NOTE
CRITICAL ALTITUDES ARE
BASED ON ZERO RAM AND
STANDARD AIR. WHEN USING
GRADE 100/130 FUEL SEE FIG.
42 FOR PROPER LIMITS.

BROKEN LINES INDICATE
UNSTABLE OPERATION.

ALTITUDE-THOUSAND FEET

Appendix I of this publication shall not be carried in aircraft on combat missions
or when there is a reasonable chance of its falling into the hands of the enemy.

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# FLIGHT OPERATION INSTRUCTION CHART

**AIRCRAFT MODEL(S) F8F-2**

**ENGINE(S): R-2800-30W**

| EXTERNAL LOAD ITEMS |
|---|
| 1—150 GAL. DROP TANK |

**CHART WEIGHT LIMITS: 11231**

| LIMITS | M.P. RPM IN.HG. | BLOWER POSITION | MIXTURE POSITION | CYL. TEMP. LIMIT | TOTAL G.P.H. |
|---|---|---|---|---|---|
| WAR EMERG. | | | | | |
| MILITARY POWER | 2800 | 60 | LOW RICH | 260°C | 30 MIN. |
| | | | | 260°C | 310 |

NOTES: COLUMN I IS FOR EMERGENCY HIGH SPEED CRUISING. ONLY. COLUMNS II, III, IV AND V GIVE PROGRESSIVE INCREASE IN RANGE AT A SACRIFICE IN SPEED. AIR MILES PER GALLON (MI./GAL.) (NO WIND), GALLONS PER HR. (G.P.H.) AND TRUE AIRSPEED (T.A.S.) ARE APPROXIMATE VALUES FOR REFERENCE. RANGE VALUES ARE FOR AN AVERAGE AIRPLANE FLYING ALONE (NO WIND). TO OBTAIN BRITISH IMPERIAL GAL. (OR G.P.H.) MULTIPLY U.S. GAL. (OR G.P.H.) BY 10 THEN DIVIDE BY 12.

INSTRUCTIONS FOR USING CHART: SELECT FIGURE IN FUEL COLUMN EQUAL TO OR LESS THAN AMOUNT OF FUEL TO BE USED FOR CRUISING. MOVE HORIZONTALLY TO RIGHT OR LEFT AND SELECT RANGE VALUE EQUAL TO OR GREATER THAN THE STATUTE OR NAUTICAL AIR MILES TO BE FLOWN. VERTICALLY BELOW AND OPPOSITE VALUE NEAREST DESIRED CRUISING ALTITUDE (ALT.) READ RPM, MANIFOLD PRESSURE (M.P.) AND MIXTURE SETTING REQUIRED.

## COLUMN I

| RANGE IN AIRMILES | | FUEL | MAXIMUM CONTINUOUS | | | | | |
|---|---|---|---|---|---|---|---|---|
| STATUTE | NAUTICAL | U.S. GAL. | R.P.M. | M.P. INCHES | MIX-TURE | TOT. GPH | MPH | KTS. |
| 555 | | 335 | | | | | | |
| 540 | | 300 | | | | | | |
| 480 | | 260 | | | | | | |
| 420 | | 220 | | | | | | |
| 360 | | 180 | | | | | | |
| 300 | | 140 | | | | | | |
| 240 | | 100 | | | | | | |
| 180 | | 60 | | | | | | |

| PRESS ALT. FEET | R.P.M. | M.P. INCHES | MIX-TURE | TOT. GPH | MPH | KTS. |
|---|---|---|---|---|---|---|
| 40000 | | | | | | |
| 35000 | | | | | | |
| 30000 | | | | | | |
| 25000 | 2470 | 39.5 | NORM. | 179 | 416 | 362 |
| 20000 | 2230 | 40.8 | NORM. | 170 | 411 | 357 |
| 15000 | 2250 | 38.0 | NORM. | 196 | 402 | 349 |
| 10000 | 2020 | 40.2 | NORM. | 204 | 387 | 336 |
| 5000 | 2260 | 33.8 | NORM. | 224 | 379 | 329 |
| S.L. | 2160 | 35.0 | NORM. | 224 | 361 | 314 |
| | 2600 | 44.8 | NORM. | | | |
| | 2600 | 47.5 | NORM. | | | |
| | 2600 | 47.5 | NORM. | | | |
| | 2600 | 47.5 | NORM. | | | |
| | 2600 | 47.5 | NORM. | | | |
| | 2600 | 48.7 | NORM. | | | |

(2.5 STAT. (2.17 NAUT.) MI./GAL.)

## COLUMN II

| RANGE IN AIRMILES | | FUEL |
|---|---|---|
| STATUTE | NAUTICAL | U.S. GAL. |
| 484 | | 335 |
| 470 | | 300 |
| 418 | | 260 |
| 366 | | 220 |
| 314 | | 180 |
| 261 | | 140 |
| 209 | | 100 |
| 157 | | 60 |

| PRESS ALT. FEET | R.P.M. | M.P. INCHES | MIX-TURE | TOT. GPH | MPH | KTS. |
|---|---|---|---|---|---|---|
| 40000 | | | | | | |
| 35000 | | | | | | |
| 30000 | | | | | | |
| 25000 | 2300 | 39.1 | NORM.130 | 391 | 339 | |
| 20000 | 2080 | 37.4 | NORM.124 | 374 | 324 | |
| 15000 | 1940 | 36.5 | NORM.120 | 365 | 317 | |
| 10000 | 1880 | 34.8 | NORM.116 | 348 | 302 | |
| 5000 | 1830 | 32.5 | NORM.108 | 325 | 282 | |
| S.L. | 1780 | 30.5 | NORM.100 | 305 | 265 | |

(3.1 STAT. (2.69 NAUT.) MI./GAL.)

SUBTRACT FUEL ALLOWANCES NOT AVAILABLE FOR CRUISING (1)

## COLUMN III

| RANGE IN AIRMILES | | FUEL |
|---|---|---|
| STATUTE | NAUTICAL | U.S. GAL. |
| 666 | | 335 |
| 650 | | 300 |
| 577 | | 260 |
| 505 | | 220 |
| 432 | | 180 |
| 360 | | 140 |
| 288 | | 100 |
| 216 | | 60 |

| PRESS ALT. FEET | R.P.M. | M.P. INCHES | MIX-TURE | TOT. GPH | MPH | KTS. |
|---|---|---|---|---|---|---|
| 25000 | 2120 | 34.1 | NORM. 98 | 357 | 310 | |
| 20000 | 2080 | 35.4 | NORM. 94 | 342 | 297 | |
| 15000 | 1940 | 37.2 | NORM. 91 | 327 | 284 | |
| 10000 | 1880 | 37.2 | NORM. 90 | 325 | 282 | |
| 5000 | 1830 | 37.1 | NORM. 83 | 300 | 261 | |
| S.L. | 1780 | 33.8 | NORM. 77 | 280 | 243 | |

(3.7 STAT. (3.22 NAUT.) MI./GAL.)

## COLUMN IV

| RANGE IN AIRMILES | | FUEL |
|---|---|---|
| STATUTE | NAUTICAL | U.S. GAL. |
| 776 | 675 | 335 |
| 756 | 656 | 300 |
| 672 | 584 | 260 |
| 588 | 510 | 220 |
| 505 | 438 | 180 |
| 420 | 365 | 140 |
| 336 | 292 | 100 |
| 252 | 191 | 60 |

| PRESS ALT. FEET | R.P.M. | M.P. INCHES | MIX-TURE | TOT. GPH | MPH | KTS. |
|---|---|---|---|---|---|---|
| 25000 | 2120 | 27.7 | NORM. 71 | 300 | 261 | |
| 20000 | 1960 | 30.4 | NORM. 71 | 300 | 261 | |
| 15000 | 1810 | 33.0 | NORM. 69 | 290 | 252 | |
| 10000 | 1500 | 37.8 | NORM. 70 | 295 | 256 | |
| 5000 | 1400 | 37.3 | NORM. 65 | 275 | 239 | |
| S.L. | 1400 | 37.0 | NORM. 60 | 255 | 222 | |

## COLUMN V

| RANGE IN AIRMILES | | FUEL | MAXIMUM AIR RANGE | | | | | |
|---|---|---|---|---|---|---|---|---|
| STATUTE | NAUTICAL | U.S. GAL. | PRESS ALT. FEET | R.P.M. | M.P. INCHES | MIX-TURE | TOT. GPH | MPH | KTS. |
| | | 335 | 40000 | | | | | | |
| | | 300 | 35000 | | | | | | |
| | | 260 | 30000 | | | | | | |
| | | 220 | 25000 | 2080 | 26.8 | NORM. 75 | 270 | 234 | |
| | | 180 | 20000 | 1850 | 28.5 | NORM. 58 | 248 | 216 | |
| | | 140 | 15000 | 1800 | 29.0 | NORM. 47 | 228 | 198 | |
| | | 100 | 10000 | 1600 | 31.0 | NORM. 43 | 211 | 183 | |
| | | 60 | 5000 | 1400 | 29.5 | NORM. 39 | 195 | 169 | |
| | | | S.L. | 1400 | 35.0 | NORM. 37 | 181 | 157 | |

## SPECIAL NOTES

(1) MAKE ALLOWANCE FOR WARM-UP, TAKE-OFF & CLIMB PLUS ALLOWANCE FOR WIND, RESERVE AND COMBAT AS REQUIRED.

(2) FUEL FLOWS HAVE BEEN INCREASED 15%

### EXAMPLE

AT 11230 LB. GROSS WEIGHT WITH 220 GAL. OF FUEL
(AFTER DEDUCTING TOTAL ALLOWANCES OF 29 GAL.)
TO FLY 815 STAT. AIRMILES AT 15000 FT. ALTITUDE
MAINTAIN 1840 RPM AND 34.1 IN. MANIFOLD PRESSURE
WITH MIXTURE SET: NORMAL

### LEGEND

ALT. : PRESSURE ALTITUDE
M.P. : MANIFOLD PRESSURE
GPH : U.S. GAL. PER HOUR
TAS : TRUE AIRSPEED
KTS. : KNOTS
S.L. : SEA LEVEL

F.R. : FULL RICH
RICH : RICH
NORM. : NORMAL
M.L. : MANUAL LEAN
F.T. : FULL THROTTLE

DATA AS OF 12-16-48      BASED ON: ENGINE SPEC.

RED FIGURES ARE PRELIMINARY DATA, SUBJECT TO REVISION AFTER FLIGHT CHECK

*Figure 75 (Sheet 1 of 3 Sheets)—Flight Operation Instruction Charts*

R-1-48
AAFMC-528

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**RESTRICTED**

Appendix I of this publication shall not be carried in aircraft on combat missions or when there is a reasonable chance of its falling into the hands of the enemy.

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Appendix I

# FLIGHT OPERATION INSTRUCTION CHART

**AIRCRAFT MODEL(S)** F8F-2  **ENGINE(S):** R-2800-30W  **EXTERNAL LOAD ITEMS—NONE**

**CHART WEIGHT LIMITS:** 10331

| LIMITS | RPM | M.P. IN.HG. | BLOWER POSITION | MIXTURE POSITION | TIME LIMIT | CYL. TEMP. | TOTAL G.P.H. |
|---|---|---|---|---|---|---|---|
| WAR EMERG. | | | | | | | |
| MILITARY POWER | 2800 | 60 | | RICH | 30 MIN. | 260°C | 310 |

FOR DETAILS SEE POWER PLANT CHART (FIG. SECT.III)

**INSTRUCTIONS FOR USING CHART:** SELECT FIGURE IN FUEL COLUMN EQUAL TO OR LESS THAN AMOUNT OF FUEL TO BE USED FOR CRUISING MOVE HORIZONTALLY TO RIGHT OR LEFT AND SELECT RANGE VALUE EQUAL TO OR GREATER THAN THE STATUTE OR NAUTICAL AIR MILES TO BE FLOWN. VERTICALLY BELOW AND OPPOSITE VALUE NEAREST DESIRED CRUISING ALTITUDE (ALT.) READ RPM, MANIFOLD PRESSURE (M.P.) AND MIXTURE SETTING REQUIRED.

**NOTES:** COLUMN I IS FOR EMERGENCY HIGH SPEED CRUISING ONLY. COLUMNS II, III, IV AND V GIVE PROGRESSIVE INCREASE IN RANGE AT A SACRIFICE IN SPEED. AIR MILES PER GALLON (MI./GAL.) (NO WIND), GALLONS PER HR. (G.P.H.) AND TRUE AIRSPEED (T.A.S.) ARE APPROXIMATE VALUES FOR REFERENCE. RANGE VALUES ARE FOR AN AVERAGE AIRPLANE FLYING ALONE (NO WIND) TO OBTAIN BRITISH IMPERIAL GAL. (OR G.P.H.) MULTIPLY U.S.GAL. (OR G.P.H.) BY 10 THEN DIVIDE BY 12.

## COLUMN I — MAXIMUM CONTINUOUS

| RANGE IN AIRMILES STATUTE | RANGE IN AIRMILES NAUTICAL | FUEL U.S. GAL. | R.P.M. | M.P. INCHES | TOT. GPH | MPH | KTS. | MIX-TURE |
|---|---|---|---|---|---|---|---|---|
| | | 185 180 | | | | | | |
| | | 160 140 120 | 2600 2600 2600 | 44.8 47.5 47.5 | 179 170 196 | 392 388 383 | 340 337 333 | NORM. NORM. NORM. |
| | | 100 80 60 | 2600 2600 2600 | 47.5 47.5 48.7 | 204 224 224 | 366 359 343 | 318 312 298 | NORM. NORM. NORM. |

## COLUMN II

| RANGE IN AIRMILES STATUTE | RANGE IN AIRMILES NAUTICAL | FUEL U.S. GAL. | R.P.M. | M.P. INCHES | TOT. GPH | MPH | KTS. | MIX-TURE |
|---|---|---|---|---|---|---|---|---|
| 837 750 | 728 652 | 185 180 | | | | | | |
| 650 550 450 | 565 479 392 | 160 140 120 | 2540 2600 2320 | 42.2 39.5 40.0 | 150 148 140 | 375 368 355 | 326 320 308 | NORM. NORM. NORM. |
| 350 250 150 | 304 217 131 | 100 80 60 | 2330 2350 2320 | 35.4 35.8 36.8 | 133 127 118 | 332 315 295 | 288 274 256 | NORM. NORM. NORM. |

## COLUMN III

| RANGE IN AIRMILES STATUTE | RANGE IN AIRMILES NAUTICAL | FUEL U.S. GAL. | R.P.M. | M.P. INCHES | TOT. GPH | MPH | KTS. | MIX-TURE |
|---|---|---|---|---|---|---|---|---|
| 1040 930 | 901 807 | 185 180 | | | | | | |
| 806 682 559 | 700 592 485 | 160 140 120 | 2380 2160 2210 | 36.4 38.1 37.1 | 12 08 10 | 350 336 320 | 304 292 294 | NORM. NORM. NORM. |
| 435 310 186 | 376 269 162 | 100 80 60 | 1960 2060 1970 | 39.1 33.0 35.0 | 95 90 | 320 295 278 | 278 256 242 | NORM. NORM. NORM. |

SUBTRACT FUEL ALLOWANCES NOT AVAILABLE FOR CRUISING (1)

## COLUMN IV

| RANGE IN AIRMILES STATUTE | RANGE IN AIRMILES NAUTICAL | FUEL U.S. GAL. | R.P.M. | M.P. INCHES | TOT. GPH | MPH | KTS. | MIX-TURE |
|---|---|---|---|---|---|---|---|---|
| 1240 1110 | 1080 966 | 185 180 | | | | | | |
| 962 815 666 | 838 710 580 | 160 140 120 | 2170 2010 1840 | 29.0 32.0 34.1 | 79 78 75 | 290 290 280 | 252 252 243 | NORM. NORM. NORM. |
| 518 370 222 | 451 322 194 | 100 80 60 | 1780 1630 1530 | 35.7 33.0 37.0 | 79 73 67 | 290 270 248 | 252 234 214 | NORM. NORM. NORM. |

## COLUMN V

| RANGE IN AIRMILES STATUTE | RANGE IN AIRMILES NAUTICAL | FUEL U.S. GAL. | R.P.M. | M.P. INCHES | TOT. GPH | MPH | KTS. | MIX-TURE |
|---|---|---|---|---|---|---|---|---|
| | | 185 180 | | | | | | |
| | | 160 140 120 | 2140 1930 1720 | 28.8 29.4 30.8 | 69 61 53 | 270 248 198 | 235 215 198 | NORM. NORM. NORM. |
| | | 100 80 60 | 1600 1400 1400 | 32.3 30.2 35.0 | 49 45 42 | 211 195 181 | 183 169 157 | NORM. NORM. NORM. |

**MAXIMUM AIR RANGE**

| PRESS ALT. FEET |
|---|
| 40000 35000 30000 |
| 25000 20000 15000 |
| 10000 5000 S.L. |

**SPECIAL NOTES**

(1) MAKE ALLOWANCE FOR WARM-UP, TAKE-OFF & CLIMB PLUS ALLOWANCE FOR WIND, RESERVE AND COMBAT AS REQUIRED.

(2) FUEL FLOWS HAVE BEEN INCREASED 15%

**EXAMPLE**

AT 10350 LB. GROSS WEIGHT WITH 120 GAL. OF FUEL (AFTER DEDUCTING TOTAL ALLOWANCES OF 19 GAL.) TO FLY 432 STAT. AIRMILES AT 10000 FT. ALTITUDE MAINTAIN 1880 RPM AND 37.2 IN. MANIFOLD PRESSURE WITH MIXTURE SET: NORMAL

**LEGEND**

ALT. : PRESSURE ALTITUDE   F.R. : FULL RICH
M.P. : MANIFOLD PRESSURE   RICH : RICH
GPH : U.S. GAL. PER HOUR   NORM. : NORMAL
TAS : TRUE AIRSPEED   M.L. : MANUAL LEAN
KTS. : KNOTS   F.T. : FULL THROTTLE
S.L. : SEA LEVEL

**RED FIGURES ARE PRELIMINARY DATA, SUBJECT TO REVISION AFTER FLIGHT CHECK**

DATA AS OF 12-16-48   BASED ON: ENGINE SPEC.

AAF&NC-528   4-1-44

**Figure 75 (Sheet 2 of 3 Sheets)—Flight Operation Instruction Charts**

Appendix I of this publication shall not be carried in aircraft on comont missions or when there is a reasonable chance of its falling into the hands of the enemy.

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**AN 01-85FD-1**

# FLIGHT OPERATION INSTRUCTION CHART

**EXTERNAL LOAD ITEMS**
1 RADAR BULB

**AIRCRAFT MODEL(S) F8F-2N**
**ENGINE(S): R-2800-30W**

**CHART WEIGHT LIMITS: WT=10672**

### LIMITS

| | RPM | M.P. IN.HG. | BLOWER POSITION | MIXTURE POSITION | TIME LIMIT | CYL. TEMP. | TOTAL G.P.H. |
|---|---|---|---|---|---|---|---|
| WAR EMERG. | | | | | | | |
| MILITARY POWER | 2800 | 60 | LOW | RICH | 30 MIN | 260C | 310 |

**INSTRUCTIONS FOR USING CHART:** SELECT FIGURE IN FUEL COLUMN EQUAL TO OR LESS THAN AMOUNT OF FUEL TO BE USED FOR CRUISING. MOVE HORIZONTALLY TO RIGHT AND SELECT RANGE VALUE EQUAL TO OR GREATER THAN THE STATUTE OR NAUTICAL AIR MILES TO BE FLOWN. VERTICALLY BELOW AND OPPOSITE VALUE NEAREST DESIRED CRUISING ALTITUDE (ALT.) READ RPM, MANIFOLD PRESSURE (M.P.) AND MIXTURE SETTING REQUIRED. (FOR DETAILS SEE POWER PLANT CHART (FIG.) SECT. III.)

**NOTES:** COLUMN I IS FOR EMERGENCY HIGH SPEED CRUISING ONLY. COLUMNS II, III, IV AND V GIVE PROGRESSIVE INCREASE IN RANGE AT A SACRIFICE IN SPEED. AIR MILES PER GALLON (MI./GAL.) (NO WIND), GALLONS PER HR. (G.P.H.) AND TRUE AIRSPEED (T.A.S.) ARE APPROXIMATE VALUES FOR REFERENCE. RANGE VALUES ARE FOR AN AVERAGE AIRPLANE FLYING ALONE (NO WIND). TO OBTAIN BRITISH IMPERIAL GAL. (OR G.P.H.) MULTIPLY U.S. GAL. (OR G.P.H.) BY 10 THEN DIVIDE BY 12.

### CRUISE RANGE (airmiles, no wind)

| FUEL U.S. GAL. | COL II STATUTE | COL II NAUT. | COL III STATUTE | COL III NAUT. | COL IV STATUTE | COL IV NAUT. |
|---|---|---|---|---|---|---|
| 185 | 426 | 370 | 500 | 443 | 592 | 515 |
| 180 | 414 | 360 | 495 | 430 | 576 | 500 |
| 160 | 368 | 320 | 440 | 383 | 512 | 445 |
| 140 | 322 | 280 | 385 | 335 | 447 | 390 |
| 120 | 276 | 240 | 330 | 287 | 384 | 334 |
| 100 | 200 | 200 | 275 | 239 | 320 | 278 |
| 80 | 184 | 160 | 220 | 192 | 256 | 222 |
| 60 | 138 | 120 | 165 | 144 | 192 | 167 |

(COLUMN I — SUBTRACT FUEL ALLOWANCES NOT AVAILABLE FOR CRUISING)

### MAXIMUM CONTINUOUS

| PRESS ALT. FEET | R.P.M. | M.P. INCHES | MIXTURE | TOT. GPH | T.A.S. MPH | KTS. |
|---|---|---|---|---|---|---|
| 40000 | 2600 | 44.8 | NORM. | 179 | 381 | 331 |
| 35000 | 2600 | 47.5 | NORM. | 170 | 376 | 326 |
| 30000 | 2600 | 47.5 | NORM. | 196 | 371 | 322 |
| 25000 | 2600 | 47.5 | NORM. | 204 | 359 | 312 |
| 20000 | 2600 | 47.5 | NORM. | 224 | 351 | 305 |
| 15000 | 2600 | 48.7 | NORM. | 224 | 335 | 291 |

### COLUMN II — (2.3 STAT. (2.0 NAUT.) MI./GAL.)

| PRESS ALT. FEET | R.P.M. | M.P. INCHES | MIXTURE | TOT. GPH | T.A.S. MPH | KTS. |
|---|---|---|---|---|---|---|
| 40000 | 2570 | 41.4 | NORM. | 63 | 373 | 324 |
| 35000 | 2560 | 46.0 | NORM. | 59 | 370 | 321 |
| 30000 | 2360 | 36.6 | NORM. | 46 | 340 | 295 |
| 25000 | 2330 | 39.2 | NORM. | 39 | 320 | 278 |
| 20000 | 2380 | 36.7 | NORM. | 38 | 310 | 268 |
| 15000 | 2410 | 35.5 | NORM. | 24 | 290 | 252 |

### COLUMN III — (2.75 STAT. (2.39 NAUT.) MI./GAL.)

| PRESS ALT. FEET | R.P.M. | M.P. INCHES | MIXTURE | TOT. GPH | T.A.S. MPH | KTS. |
|---|---|---|---|---|---|---|
| 40000 | 2460 | 39.3 | NORM. | 28 | 356 | 306 |
| 35000 | 2400 | 41.0 | NORM. | 21 | 343 | 298 |
| 30000 | 2110 | 40.8 | NORM. | 16 | 320 | 278 |
| 25000 | 2020 | 38.0 | NORM. | 12 | 305 | 265 |
| 20000 | 2190 | 35.2 | NORM. | 07 | 295 | 256 |
| 15000 | 2180 | 37.0 | NORM. | 02 | 280 | 243 |

### COLUMN IV — (3.20 STAT. (2.78 NAUT.) MI./GAL.)

| PRESS ALT. FEET | R.P.M. | M.P. INCHES | MIXTURE | TOT. GPH | T.A.S. MPH | KTS. |
|---|---|---|---|---|---|---|
| 25000 | 2170 | 36.2 | NORM. | 99 | 319 | 279 |
| 20000 | 1940 | 35.8 | NORM. | 99 | 318 | 276 |
| 15000 | 1710 | | NORM. | 59 | | |
| 10000 | 1600 | 36.0 | NORM. | 91 | 290 | 252 |
| 5000 | 1400 | 33.0 | NORM. | 87 | 280 | 243 |
| S.L. | 1400 | 34.1 | NORM. | 82 | 263 | 227 |

### COLUMN V — MAXIMUM AIR RANGE

| PRESS ALT. FEET | R.P.M. | M.P. INCHES | MIXTURE | TOT. GPH | T.A.S. MPH | KTS. |
|---|---|---|---|---|---|---|
| 25000 | 2170 | 29.5 | NORM. | 78 | 264 | 228 |
| 20000 | 1940 | 30.0 | NORM. | 69 | 242 | 210 |
| 15000 | 1710 | 31.0 | NORM. | 59 | 223 | 194 |
| 10000 | 1600 | 32.8 | NORM. | 50 | 206 | 179 |
| 5000 | 1400 | 30.4 | NORM. | 46 | 190 | 165 |
| S.L. | 1400 | 35.2 | NORM. | 43 | 177 | 154 |

### EXAMPLE

AT 10672 LB. GROSS WEIGHT WITH 160 GAL. OF FUEL (AFTER DEDUCTING TOTAL ALLOWANCES OF 19 GAL.) TO FLY 447 STAT. AIRMILES AT 10000 FT. ALTITUDE MAINTAIN 1910 RPM AND 37.9 IN. MANIFOLD PRESSURE WITH MIXTURE SET: NORMAL.

### LEGEND

| | |
|---|---|
| ALT. : PRESSURE ALTITUDE | F.R. : FULL RICH |
| M.P. : MANIFOLD PRESSURE | RICH : RICH |
| GPH : U.S. GAL. PER HOUR | NORM.: NORMAL |
| TAS : TRUE AIRSPEED | M.L. : MANUAL LEAN |
| KTS. : KNOTS | F.T. : FULL THROTTLE |
| S.L. : SEA LEVEL | |

RED FIGURES ARE PRELIMINARY DATA, SUBJECT TO REVISION AFTER FLIGHT CHECK

### SPECIAL NOTES

(1) MAKE ALLOWANCE FOR WARM-UP, TAKE-OFF & CLIMB PLUS ALLOWANCE FOR WIND, RESERVE AND COMBAT AS REQUIRED.

(2) FUEL FLOWS HAVE BEEN INCREASED 15%

DATA AS OF 12-16-48     BASED ON: ENGINE SPEC.

*Figure 75 (Sheet 3 of 3 Sheets)—Flight Operation Instruction Charts*

**RESTRICTED**

Manual V1.00/ F8F V1.00

Appendix I of this publication shall not be carried in aircraft on combat missions or when there is a reasonable chance of its falling into the hands of the enemy.

## MANIFOLD PRESSURE

Cruising 21 to 34 in. Hg
Max Continuous Power 41 in. Hg
Military Power 53.5 in. Hg
Combat Power 65 in. Hg

## TACHOMETER

Cruising 1250 to 2300 rpm
Max. Continuous Power 2600 rpm
Military & Combat Power 2800 rpm

## CYLINDER HEAD TEMPERATURE

Min. For Take-off        130° C
Operating Range        232° C
Maximum                    260° C
(For One Hour)

### ENGINE GAGE UNIT

## OIL PRESSURE

Minimum    60 psi
Normal 75 to 95 psi
Maximum 100 psi

## OIL IN TEMPERATURE

Minimum 40° C
Normal Range 65 to 85° C
Maximum  95° C

## FUEL PRESSURE

Minimum 21 psi
Operating Range 21 to 23 psi
Maximum 23 psi

### NOTES

1.

Refer to engine power charts for setting limitations desired

2.

The above gage readings will not necessarily be obtainable on all instruments at the same time.

## VOLTMETER

Minimum 27.5 V
Desired Output 28.0 to 28.5V
Maximum 30V

*Figure 76—Instrument Operation Limits—F8F-1*

Appendix I of this publication shall not be carried in aircraft on combat missions
or when there is a reasonable chance of its falling into the hands of the enemy.

Appendix I

MANIFOLD PRESSURE

TACHOMETER

CYLINDER HEAD TEMPERATURE

- ■ Cruising 26 to 38 in. Hg
- ■ Max Continuous Power 44.5 in. Hg
- ■ Military Power 60 in. Hg
- ■ Combat Power 72 in. Hg

- ■ Cruising 1200 to 2300 rpm
- ■ Max. Continuous Power 2600 rpm
- ■ Military & Combat Power 2800 rpm

- ■ Min. For Take-off 130°C
- ■ Operating Range 232°C
- ■ Maximum 260°C
  (For 30 Min.)

ENGINE GAGE UNIT

OIL PRESSURE

OIL IN TEMPERATURE

FUEL PRESSURE

- ■ Minimum 80 psi
- ■ Normal 100 to 110 psi
- ■ Maximum 120 ± 5

- ■ Minimum 40°C
- ■ Normal Range 65 to 85°C
- ■ Maximum 100°C

- ■ Minimum 24 psi
- ■ Operating Range 24-26 psi
- ■ Maximum 27 psi
  (with both pumps operating)

NOTES

1.

Refer to engine power charts for setting
limitations desired.

2.

The above gage readings will not necessarily
be obtainable on all instruments at the same
time.

VOLTMETER

- ■ Minimum 27.5 V
- ■ Desired Output 28.0 to 28.5V
- ■ Maximum 30V

*Figure 77—Instruments Operation Limits—F8F-2*