



FG-1D CORSAIR Product Manual



*In memory of Rick Brown,
he was a friend and a great simmer.*

RealLight

RealLight graciously supplied by TFDi

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Any inquiries regarding commercial, military or academic use of this program should be directed via e-mail to info@milviz.com.

Product support is provided by Milviz via the product support forums.
For access please email oisin@milviz.com with your proof of purchase and preferred, or existing, forum user-name.





FG-1D
corsair

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The Corsair is arguably the most visually distinctive fighter airplane of the Second World War. Unmistakable with its rear-set cockpit, massive propeller and cranked “gull wings”, this robust and versatile aircraft was one of the longest-serving fighters of the last century. Entering service in 1942, it was still flying and fighting right into the sixties. The Corsair saw action in the Second World War, the Korean War and various other hostilities right up to its last kill in 1969.

The gull-wing design, implemented to accommodate the mighty Pratt & Whitney R-2800 -8W “Double Wasp” with its huge Hamilton Standard Hydromatic propeller, enabled short and sturdy undercarriage legs, ideal for carrier operations, and the un-faired perpendicular wing-fuselage joints, were aerodynamically efficient and contributed to its high speed.

During the War, demand for these sturdy aircraft increased, outstripping Chance-Vought’s supply capacity. Rival manufacturers Brewster and Goodyear were tasked with meeting the shortfall. The designation FG-1D identifies our Corsair as a Goodyear built aircraft.

The Milviz FG-1D is loosely based on FG-1D Bu No.92132. Manufactured too late for war service, the aircraft spent its naval career in the Reserves before being retired in 1957. In the 70’s, she was brought up to “good enough” flying condition and used in the TV series “Baa Baa Black Sheep”, but then sat again for decades before being acquired by the Tri-State Warbird Museum (Batavia, Ohio), which is currently in the process of restoring the aircraft. A history of the aircraft can be viewed here:

Link: [CORSAIR/Bu. 92132](#)

Link: [POOR LITTLE LAMBS – The Corsairs of Baa Baa Blacksheep](#)



- Realistic flight dynamics
- Realistic startup and shutdowns
- Realistic systems and avionics
- Realistic weapons operation using TacPack
- Realistic engine modeling with water injection and authentic mixture and supercharger mapping
- High quality external model using normal, bump and specular maps
- High quality internal model complete with custom 3D gauges
- Accurately modeled electrical system and cockpit lighting
- Authentically animated high air-load flap blowing and undercarriage dive brakes
- Model is highly configurable through our MVAMS application including wide choice of external ordnance and drop tanks
- Ready for carrier operations, including working arrester hook and folding wings
- High resolution layer based paint kit available for download
- 6 HD liveries included



SYSTEM REQUIREMENTS

The following requirements apply as a minimum to successfully install and operate the Milviz FG-1D.

Please note that choice of scenery, location, simulator settings and 3rd party utilities may place additional demands on your simulation platform.

SUPPORTED PLATFORMS:

- Lockheed Martin Prepar3D, version 2
- Lockheed Martin Prepar3D, version 3
- Lockheed Martin Prepar3D, version 4

Note: This product is intended to be operated with a fully up-to-date installation of Prepar3D. This includes any released updates, patches, hotfixes, or point releases. However, because updates to Prepar3D can sometimes cause compatibility issues with existing aircraft of a complex nature, our recommendation is to check for compatibility issues or the update status of this product on our product forums prior to updating the simulator.

SUPPORTED OPERATING SYSTEMS:

- Windows 7
- Windows 10

PROCESSOR (CPU)

- 2.4 GHz single core processor required
- (3.0 GHz, multiple core processor or better recommended)

VIDEO CARD (GPU)

- DirectX 9 compliant video card with 1024 MB video ram

SYSTEM MEMORY (RAM):

- 4 GB RAM

DISK SPACE

- 2.5 GB or greater

GAMING CONTROLLER

- Joystick, yoke, or other gaming controller

Note: All MilViz products require a functioning gaming device such as a joystick for proper operation.

CARRIER

YoYoSims has kindly made a simulation of the USS Essex available via the SOH forums: [download file](#).
AI Carriers 2 is available here: [download file](#).



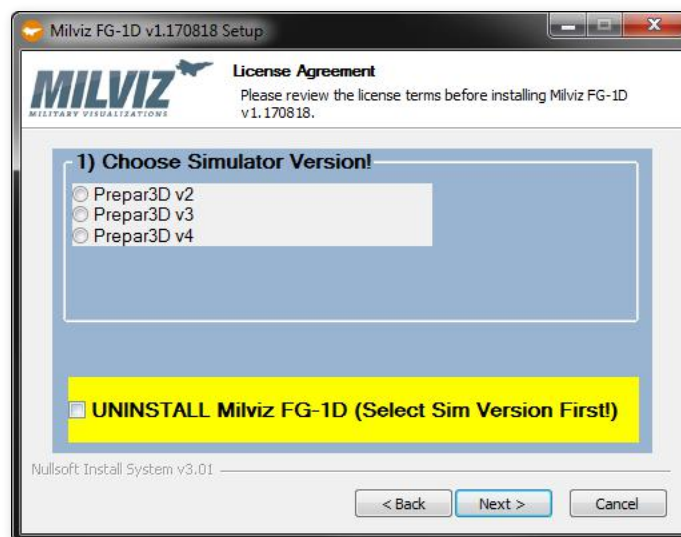
INSTALLATION INSTRUCTIONS

Important: As with other flight simulator addons, pre-installation precautions should involve closing other open applications, as well as temporarily disabling any active antivirus software. Please be sure to remember to re-enable your antivirus software after installation!

After purchase, you will have been given a link or an option to download a zipped (.zip) file. This compressed file contains an executable (.exe) file, which is the installer for the MilViz FG-1D

To begin installation, please right click on the executable file and select “Run as administrator”.

After clicking through on the initial setup screen and reviewing and agreeing to the license terms, you will come to the main installation window (below).



CHOOSING YOUR SIMULATOR

For a new installation, you are able to select a single option from a list of possible simulators to install into. The installer will automatically detect which simulators you have installed, and present you with only those selections.

Please note that you may only install into one simulator at a time; if you have more than one simulator installed on your computer, you are able to install to multiple simulators by re-running the installer and choosing a different simulator version.

Click on the “Next” button to continue with the installation process.

NB: to un-install the FG-1D, please use the yellow highlighted ‘un-install’ option from the installer menu above.



REALISM SETTINGS

The MilViz FG-1D Corsair has been carefully built with a very high level of accuracy in mind. Development and testing have both been carried out using the highest realism settings available within the simulator.

The settings available within the Realism panel consist of changes designed to not only make the aircraft easier to fly, but to also lessen the workload of the pilot. The goal is to ensure that any settings that might impact your full enjoyment of the MilViz FG-1D Corsair are correctly set.

The following images of the settings for are meant to offer the most realistic depiction of the both the flight model as well as the general operation of the aircraft. Without these settings in place, particularly in regards to the flight model section, the aircraft may not perform as intended.

Options - Realism

General

Application

Information

Sound

Traffic

Realism

Graphics

Display

World

Lighting

Weather

Controls

Key Assignments

Axis Assignments

Calibration

Other

Realism

Current Settings: Custom

FLIGHT MODEL

General

100 %

P-factor

100 %

Torque

100 %

Gyro

100 %

Crash tolerance

100 %

Easy

Realistic

INSTRUMENTS AND LIGHTS

☒ Pilot controls aircraft lights

☐ Enable gyro drift

☐ Display true airspeed

☒ Display indicated airspeed

CRASHES AND DAMAGE

☐ Ignore crashes and damage

☒ Detect crashes and damage

☒ Vehicle stress causes damage

☒ Allow collisions with other vehicles

☐ Ignore avatar collision

ENGINES

☐ Enable automixture

☐ Unlimited fuel

☒ Engine stress damages engine

SPECIAL EFFECTS

☒ Visualize G-effects

FLIGHT CONTROLS

☐ Use Autorudder

ATTACHMENTS

☐ Ignore weight

☐ Ignore forces



REALISM SETTINGS

FLIGHT MODEL

For the highest degree of realism, all sliders in the flight model section should be set fully to the right.

INSTRUMENTS AND LIGHTS

The MilViz FG-1D has a sophisticated lighting system in place, so the “Pilot controls aircraft lights” should be checked.

“Enable gyro drift” and “Display indicated airspeed” are not essential, but they will add to the realistic operation of any aircraft.

CRASHES AND DAMAGE

These settings are not essential, but do instill in one a sense of safe operation of the simulation.

ENGINES

The automixture can be disabled in the realism settings.

“Unlimited fuel” is non-essential, but disabling does allow for correct fuel management simulation.

SPECIAL EFFECTS

“G-effects” can be enabled to allow for screen effects to occur in excessive high or low G situations.

FLIGHT CONTROLS

“Autorudder” should be off so long as you have means to operate the aircraft rudder via rudder pedals or a twist axis on your joystick.

For HOTAS, FSUIPC and other assignments please go to your Control settings->Other page and verify your P3D is configured to use DirectInput, not RawInput.



MVAMS

MVAMS stands for MilViz Addon Management System. It represents our easy-to-use solution to the growing complexity of configurable options and choices available in our aircraft.

MVAMS is a standalone application which is installed and utilized by many of our newer releases. It was our aim to create a user-friendly environment in which our aircraft could be easily and quickly configured in terms of visual options, avionics, loadout, etc.

The MilViz FG-1D Corsair installs (if not already present) and fully integrates with the MVAMS application, allowing the user to choose between the differing body styles, passenger or cargo load and visibility, and avionics options.

STARTING MVAMS

If this is your first MilViz product that includes the MVAMS application, running the installer will place a short-cut icon on your desktop. If this is not your first MVAMS equipped MilViz aircraft, the desktop short-cut icon may already exist.

You may use this icon to open the MVAMS application at any time while the simulator is not running to configure your FG-1D Corsair to your preferences.



After your installation is complete, the MVAMS application will open automatically. You are not required to configure your aircraft at this time; you may choose to close it if you wish.



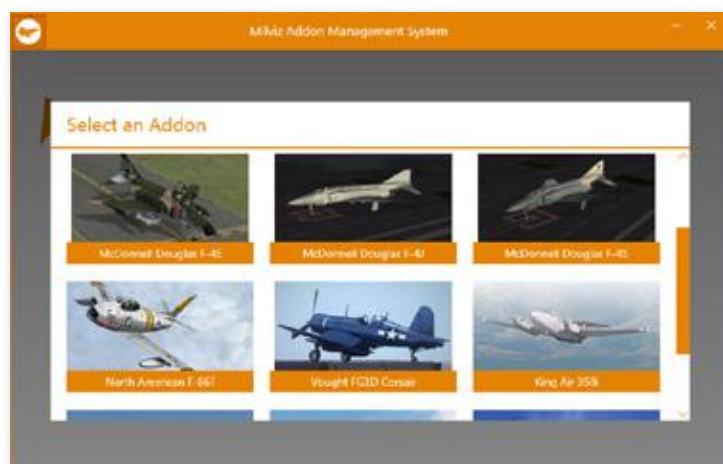
At this point, if there are any updates available for your addons, a notification will be displayed. MVAMs can only display one update at a time. Once an incremental update has been installed, please run MVAMs once again to check if other updates are available.



SELECTING YOUR AIRCRAFT

When you open the MVAMS application, you are presented with the instruction to select an addon from the Quick Access menu. Clicking on the top left icon will bring up visual icons of any installed MilViz addons which are integrated with the MVAMS application.

Your newly installed FG-1D Corsair will now be available to select.



CONFIGURING THE FG-1D

One feature that we've designed into our MVAMS application is that only options that are particular to the aircraft in question are available to browse and select, meaning that you won't see military specific loadout options in your general aviation aircraft, nor will you see GPS options in your Century Series fighter jet.

For the FG-1D, two configuration pages are available, with the first pertaining to the flying state and radios, and the second covering control axis assignment. The selection of weapons, fuel quantity and pilot visibility is controlled by the loadout manager (SHIFT+1).

GENERAL

The general tab allows you to specify the start-up state of the Corsair upon loading the aircraft in the simulator.

DEFAULT STATE

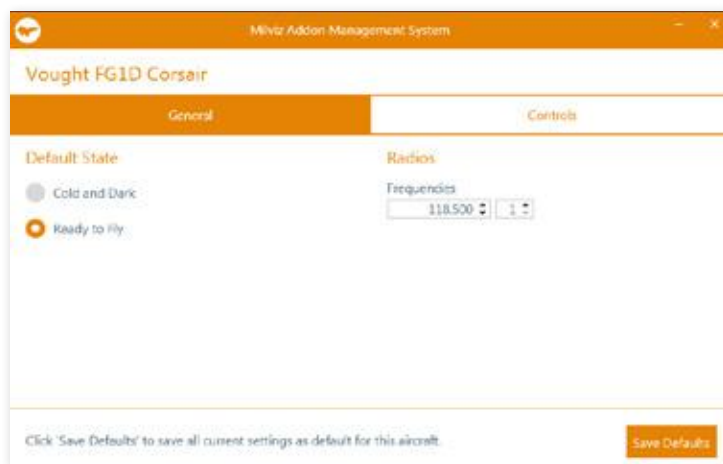
Cold and Dark allows for a completely cold and powered down aircraft, where you will have to run through a proper start-up routine to begin your flight. The aircraft is loaded as such regardless of saved flight status.

Ready To Fly loads the aircraft with pre-existing aircraft state when starting from Free Flight or a previous saved flight.

It is recommended to use the option if starting from a saved flight, particular if the saved flight was in progress.

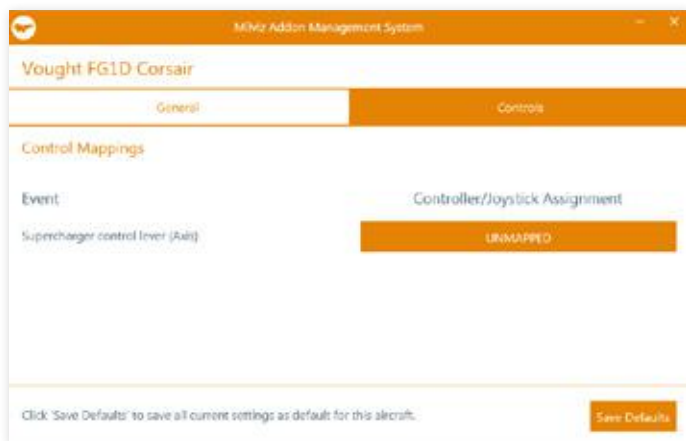
RADIOS

C-43/ARC : 9 presets are available. Frequencies from 118.000 and 136.975 can be set.

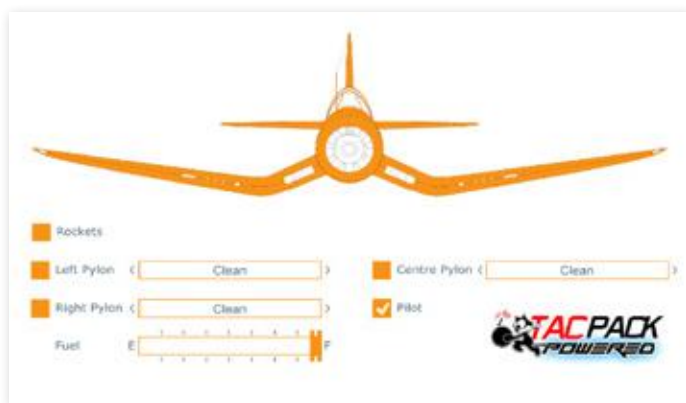


CONTROLS

The controls configuration page allows you to define the supercharger control axis mapping



LOADOUT



FUEL

Fuel amount can be varied using the slider

PILOT

Visibility of pilot is set via the check box

ARMAMENT

Various combinations of drop-tanks, bombs and rockets can be chosen. Click the check mark first, then cycle through the box to switch different options on the left and right pylons.

Note: Centre pylon is a tank only.



EVENT MAPPING

C-26/ARC-5 selector / ADF selector	L:FG1D181, enum
Arresting Hook lever	L:FG1D189, enum
Engine starter switch	FG1D120, bool
Ignition switch	FG1D024, number (0, 1,2,3)

If you have additional hardware panels or a HOTAS joystick, you may use FSUIPC to assign the switches using these event map tables



TROUBLESHOOTING

Most issues are caused by:

1. Interference with either anti-virus software or other sim software
2. Version incompatibility
3. Insufficient permissions
4. An overlooked item in the manual!

The following are essential:

1. Disable your anti-virus before downloading and installing.
2. Make sure that the P3D directory is off limits to any AV scanning
3. Disable UAC.
Control panel->user accounts->change user account control settings and move the bar all the way to the bottom.
4. Install and run sim as an admin
(right click on the sim exe and select properties->compatibility->run this program as administrator)
5. Go into "turn on windows feature on or off" and put a check in the box for .Net3.5 Framework{ including 2.0 And 3.0} Before installing the package on windows 8.1. [NB: win 8.1 is not supported]
6. Your video card needs to be dx11 compatible with access to the correct dx libraries
7. If you are using an FSX migration tool (like Estonia) you must completely disable it before running the sim
8. Do not use any milviz aircraft as the default aircraft
9. Ensure that you have the appropriate simconnect libraries installed by running the **simconnect.msi** found in your p3d\redist\interface\fsx-sp2-xpack\retail\lib.

PRODUCT SUPPORT

If you need product support please have a look in the forums for an existing solution. If you cannot find one, please start one new topic in the product's support forum only including details of:

1. Your system OS
2. Your sim platform and version number
3. Any 3rd party hardware or software in use
4. Any error reports (control panel->administrative tools->event viewer->windows logs->application)

The Milviz FG-1D requires Microsoft visual c++ redistributable package as follows
<https://www.microsoft.com/en-us/download/details.aspx?id=53587>

The product support forums are staffed by the systems programmers who created this simulation. For access, please send your proof of purchase to oisin@milviz.com.



GENERAL

The FG-1D airplane is a single-engine, single-seat, folding low-wing monoplane designed as a long-range fighter-bomber for carrier and land based operations.



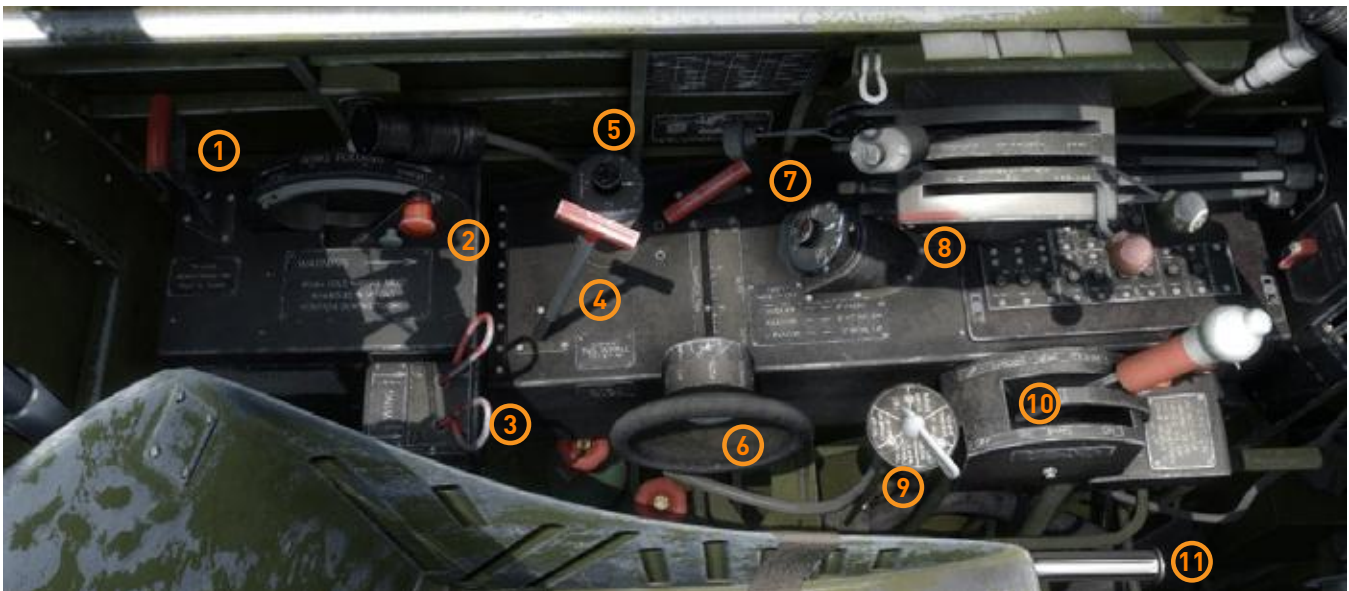
- Crew: 1
- Length: 33 ft (10.26 m)
- Wingspan: 41 ft (12.5 m)
- Height: 12 ft (4.5 m)
- Empty weight: 9,205 lb (4,175 kg)
- Loaded weight (no external load): 12,028 lb (5,714 kg)
- MAX takeoff weight: 15,415 lb (6,990 kg)
- Power plant: 1× Pratt & Whitney R-2800 -8W “Double Wasp” two-row radial engine with a two-speed two-stage supercharger, 2,000 hp (1,491 kw)
- Propeller: 3-blade Hamilton Standard Hydromatic 6501-A/6541A-0
- Propeller diameter: 13 ft 1 in (4.0 m)
- Fuel capacity: 250 U.S. gal (946 L) internal; up to 3x 150 U.S. gal (568 L) external drop tanks
- Drag area: 7.05 ft² (0.65 m²)
- Aspect ratio: 5.5
- Maximum speed: 369 knots (425 mph, 787 km/h) at 20,000 ft (6096 m)
- Stall speed: 77 knots (89 mph, 143 km/h)
- Combat range: 285 nm (328 mi, 528 km)
- Ferry range: 873 nm (1005 mi, 1617 km)
- Service ceiling 37,000 ft (12,600 m)
- Rate of climb: 3,120 ft/min (15.9 m/s)
- Take-off roll (no headwind, soft runway): 950 ft (290 m)





Cockpit - Forward

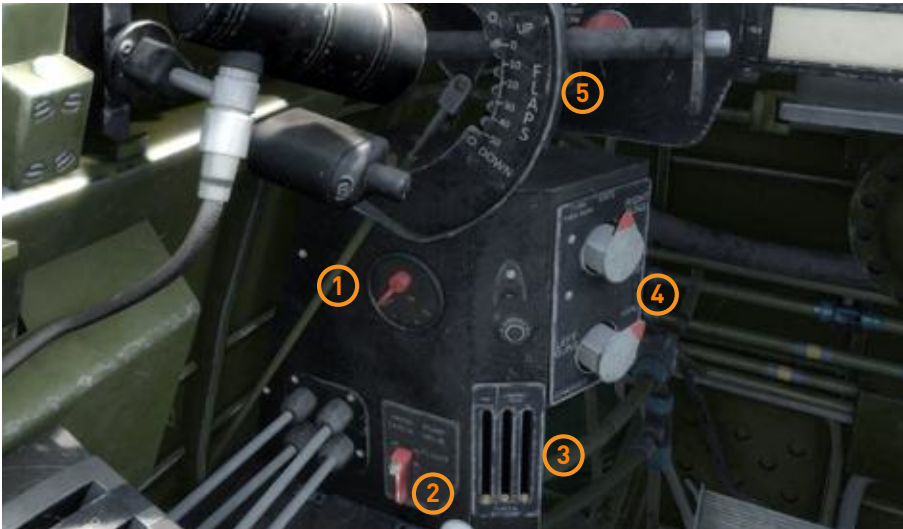
- | | |
|---------------------|----------------------|
| 1. Gun switch box | 5. Droptank switch |
| 2. Gunsight | 6. Flaps indicator |
| 3. Bomb switch box | 7. Chart tray |
| 4. Instrument panel | 8. Rocket switch box |



Cockpit - Left

- | | |
|-----------------------------|-------------------------------------|
| 1. Hinge-pin lock | 6. Elevator tab trim wheel |
| 2. Wing fold control | 7. Aileron tab trim wheel |
| 3. Manual tank/bomb release | 8. Engine controls |
| 4. Tail wheel lock | 9. Fuel tank selector |
| 5. Rudder tab trim wheel | 10. Landing gear/dive brake control |
| | 11. Hydraulic hand pump |





Cockpit - Forward-left

1. Ignition switch
2. Pump check-valve
3. Landing gear indicator
4. Gun charging console
5. Flap lever/indicator

Cockpit - Right

1. Cooling flaps control
2. Radio equipment
3. Pilot's electrical distribution box



Cockpit - Rear-right

1. C43/ARC control
2. C26/ARC-5 control
3. Arrestor hook control
4. IFF control





Instrument panel

1. Tachometer
2. Altimeter
3. Directional gyro
4. Water injection quantity warning
5. Stall warning indicator
6. Compass
7. Carburetor air temperature warning light
8. Gyro horizon
9. G-force indicator
10. Oil & fuel pressure gauge
11. Cylinder head temperature
12. Climb indicator
13. Turn & bank indicator
14. Airspeed indicator
15. Manifold pressure gauge
16. Droppable fuel tank switch
17. Fuel quantity
18. Hydraulic pressure gauge
19. Volt-ammeter
20. Fuel pressure gauge
21. Emergency hydraulic pressure release
22. Oil cooler flap indicator
23. Intercooler flap indicator



Right-hand sub instrument panel



GENERAL

In addition to the conventional surface controls the cockpit contains the power plant fuel system oil system and hydraulic system controls and other miscellaneous controls. The location and operation of each control is described as follows

POWER PLANT CONTROLS

The throttle mixture propeller governor and super-charger controls are mounted in a control unit installed on the left side of the cockpit as shown on page 16. Each control moves through a quadrant in operation. For ease of handling the engine control unit is plainly marked with the name and correct positioning of the controls mounted thereon.

THROTTLE CONTROL

The throttle control is located on the engine control unit on the left side of the cockpit.

WATER INJECTION MICRO SWITCH

In addition to its normal function, the throttle control operates the water injection micro switch. Moving the throttle control full forward (breaking the safety wire) closes the micro switch and turns the water injection equipment on. When the throttle control is in any other position the water injection equipment is off.

MIXTURE CONTROL

Standard mixture controls are implemented. The Increment and Decrement commands will move between the "Auto" values and "Full rich" or "Cut-Off". Between "Auto Lean" and "Cut-Off" the mixture will produce unpredictable results

The engine is equipped with a Bendix Stromberg injection carburettor with automatic mixture control. The mixture control has three effective positions: "Idle Cut-Off", "Auto Lean", "Auto Rich".

For flight operations (except takeoff and landing approach) the control shall be set to "Auto Lean".

If it becomes impossible to maintain cylinder head temperatures below 260° C (500° F) for 30 minutes at military power, and 232° (C 450° F) continuous at any lower power without opening the cowl flaps, enrich enough to restore proper cooling.

PROPELLER GOVERNOR CONTROL

The constant speed propeller control is located on the end of the engine control quadrant. Move the control down to increase RPM; move the control up to decrease RPM. Vernier adjustment is obtained by rotating the knob on the control lever.

Note: use max RPM use for taking off only

The control sets the constant speed unit and has no direct control over propeller blade angle. The blade angle is such that to 2700 RPM can be obtained at somewhat less than full power and 3060 RPM will not be exceeded in dives up to maximum allowable diving speed. Rapid changes in throttle or propeller control setting will tend to cause the RPM to overshoot the mark momentarily before settling down.

SUPERCHARGER CONTROL

The two-stage supercharger induction system installation comprises the main stage impeller, geared directly to the crankshaft and the auxiliary stage impeller, driven through oil operated clutches by means of which it can be engaged in either of two fixed gear ratios; "Low" or "High".

The purpose of the auxiliary stage impeller is to supply air to the carburettor at approximately sea-level pressure when operating at altitude.

Do not shift the supercharger control more often than at five minute intervals during flight except in an emergency to allow the dissipation of heat from the clutches

Note: If the warning light comes on when operating in low or high blower at low speeds, immediately open the intercooler flaps full wide.



COWL FLAP CONTROL & CYLINDER TEMPERATURES

The the cowl flap control is located on the right side of the cockpit forward of the electrical panel. Hold either open or closed until desired setting is obtained, then release. The cowl flaps should be adjusted so as not to exceed the following cylinder head temperatures

- Take-off Military and War Emergency power
- 260° C (500° F)
- High speed and climb at normal rated power
- 260° C (500° F)
- Continuous operation at any power at above
- 232° C (450° F)

The full open the setting of cowl flaps is provided primarily for ground cooling. If this setting is used in flight, buffeting of the tail surfaces will result. Open about two-thirds for takeoff and climb and closed or open slightly if required for high speed and cruising level flight. Cylinder head temperatures can be reduced by:

1. Enriching mixture
2. Opening cowl flaps
3. Reducing power
4. Increasing speed

INTERCOOLER FLAP CONTROL

Control of the carburettor air temperature when operating in low or high blower is provided by means of the Intercooler Flap Control located on the right side of the cockpit forward of the electrical panel see "Pilot's Distribution Box" on page 38.

OIL COOLER FLAP CONTROL

The quantity of cooling air to be admitted to the oil coolers is regulated by two flaps controlled from the right side of the cockpit (see page 38). The two flaps may be placed in any position between "OPEN" and "CLOSED" as required to effect the flow of the necessary quantity of cooling air through the air-duct openings to the coolers.

FUEL SYSTEM CONTROLS

TANKS

The self-sealing main tank located in the fuselage forward of the cockpit has a total capacity of 237 US gallons 197 imperial gallons of fuel including a standpipe reserve of 50 US gallons (42 imp. gallons). The two wing tanks built integrally within the outer panels have a capacity of 63 US gallons (53 imperial gallons) each. The wing tanks are provided with a CO2 vapor dilution system. Provision is made under the fuselage for the installation of a droppable auxiliary tank having a capacity of 170 US gallons (142 imperial gallons) of fuel.

For this aircraft provision is made in the fuel system for installing two Navy standard type droppable tanks each with a capacity of 154 US gallons (129 imperial gallons) of fuel on the center section twin pylons. P-38 steel droppable tanks which have a capacity of 171 US gallons (142 imperial gallons) may be installed in place of the Navy standard type tanks when the latter are not available. The original main tank and the provisions for installing a droppable tank under the fuselage are retained on these airplanes, however the two wing tanks and the vapor dilutions system are eliminated

FUEL SELECTOR

The fuel selector is located on the left hand shelf of the cockpit. For fuel selector positions see "Cockpit - Left" on page 19.

FUEL QUANTITY GAUGE

An electrical fuel quantity gauge is provided for the main tank only; it shows the total quantity of fuel in the tank including the standpipe reserve. The gauge dial is calibrated to indicate correctly when the airplane is in level flight at approximately 175 knots indicated airspeed (normal fighter load) (201 mph).



LANDING GEAR CONTROL

To operate the landing gear retraction and extension, the control is moved to, and locked in the desired position. The gear and closure doors are automatically operated in proper sequence. The positions of each side of the landing gear and of the tail wheel are shown by the respective indicators.

(Default key-command 'G')

DIVE BRAKE CONTROL

The shift type dive brake control is located on the left side of the cockpit (see page 19). Moving the control to "ON" extends the main landing gear only, the tail wheel remaining retracted. Moving the dive brake control to "OFF" retracts the main landing gear. For dive brake flight restrictions see page 34.

(Default key-command '/')

ARRESTER HOOK CONTROL.

Three settings for the arresting hook control, located on the right-hand panel, are provided; "UP", "DOWN", and "PARKING". To lower the hook (tail wheel extended) move the handle to "DOWN", and vice versa. At all times except on arrested landings and when the airplane is on the ground, the hook control should be at "UP".

The tail hook will not extend unless the tail wheel has been lowered first.

The tail hook is controlled by mouse clicks and the key command (shift+Q).

When the tail hook lever is set to "PARKING", shift+Q (to retract-extend tail hook) will not work.

When you click the lever (either left-right mouse click), the lever will automatically read the last tail hook position, if you click again the lever will revert back to "PARKING".

To extend and retract tail hook, the lever must not be in park position and the command shift+Q must be used (mouse clicks will not work).

WING FLAP CONTROL

The flap control mechanism located above the pilots left-hand shelf is designed so that any desired flap angle in 10° steps to "FULL DOWN" (50°) can be obtained by a corresponding setting of the wing flap control.

Note

The wing flap control should not be placed in position for lowering flaps at speeds in excess of 200 knots (230 mph) even though the flaps are protected by an overload relief mechanism. If the flap relief mechanism is not in operation the restricted speed with flaps down varies from 130 knots (150 mph) with flaps deflected 50° to 200 knots (230 mph) with flaps deflected 20°.

The flaps are also designed for use in maneuvering the airplane in combat. With typical maneuvering flap deflections of 20° less the airplane may be maneuvered equivalent limiting "FLAPS UP" accelerations up to 200 knots (230 mph).

The wing flap system includes a mechanism which causes the flaps to "blow up" (back off) from the angle set by the control under excessive air loads caused by speeds greater than normal. The flaps will return to the angle corresponding to the control setting when the air speed is reduced.

Flaps at 10° will blow at 180 knots (207 mph)

Flaps at 20° will blow at 160 knots (184 mph)

Flaps at 30° will blow at 140 knots (161 mph)

Flaps at 40° will blow at 120 knots (138 mph)

Flaps at 50° will blow at 100 knots (115 mph)

TAIL WHEEL LOCK CONTROL

This control is located on the left hand shelf. To unlock the tail wheel, pull upward on the control handle and turn.

ELECTRIC AUXILIARY FUEL PUMP SWITCH

The switch is located on the left-hand shelf of the cockpit



WING FOLDING AND LOCKING CONTROLS



To fold the wings, release the manual wing hinge pin lock handle adjacent to the wing folding control on the left side of the cockpit. Then move the wing fold control to “FOLD”. This operation extracts the wing hinge pins and folds the wings in the proper sequence. With the engine running, the wings will fold automatically; otherwise, the hand pump must be used.

To spread the wings set to win fold control to “SPREAD”. This operation spreads the wings and inserts the hinge pins in proper sequence. When the wings are spread, lock the pins mechanically by pulling and engaging the manual wing hinge pin locking handle in the “LOCK” position.

Warning

Wing fold handle must always be in “SPREAD” position during flight.



HYDRAULIC SYSTEM HAND PUMP

The feed for the hand pump is drawn from the bottom of the hydraulic reservoir, while that for the engine-driven pump is drawn from the half-gallon level. In the event the failure of a hydraulic pressure line allows the engine-driven pump to pump overboard all of its available fluid, the half gallon of hydraulic oil remaining in the tank is sufficient for one operation each by use of the hand pump. Of the following: wing flaps, cooling flaps, and gun charging. The arresting hook does not require hydraulic pressure for extension. Emergency landing gear extension is provided for by CO2 extension system.

If the engine is off, use the hand pump to get hydraulic pressure up to 300 psi (approximately 5 pumps) making sure the Emergency Hydraulic Pressure Release valve has not been opened. Without hydraulic pressure, neither mouse nor key command for wing fold/unfold, cowl flap, oil cooler or intercooler will work.



TRIM TABS

Trim tabs are provided on the left-wing ailerons on the elevators and on the rudder to permit control forces to be trimmed to comfortable values under all normal operating conditions.

(For recommended Take-off tab settings please see Take-off)

AILERON TAB CONTROL

Rotating the aileron tab control (inclined wheel on left hand shelf) to the right results in downward movement of the right-wing in flight. Rotating the hand wheel to the left results in upward movement of the right wing.

ELEVATOR TAB CONTROL

Rotating the elevator trim tab control (large vertical wheel on the side of the left-hand shelf) forward lowers the nose of the airplane in flight. Aft rotation raises the nose.

RUDDER TAB CONTROL

Rotating the rudder tab control (horizontal hand wheel on left hand shelf) to the right moves the nose of the airplane to the right in flight. Rotating the hand wheel to the left moves the nose of the airplane to the left.

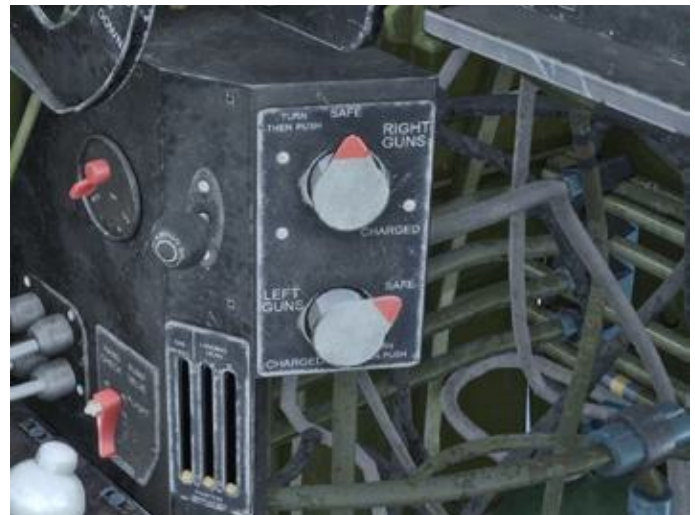


GUN CHARGING CONTROL

The top charging knob located on the left hand side of the cockpit, just below the main instrument panel, operates the charging and safety of the three right guns while the lower knob controls the three left guns.

To charge the guns rotate the knob to charge, then push in. The knob will spring back out, indicating completion of the cycle of operation. The breaches are now closed, with live shells in the firing chambers.

To safety the guns, turn the charging knob to "SAFE" and push in. The knob will spring out when the guns are safe. The gun charges will then hold the bolts back in the safe position. To allow the bolts to go forward from "SAFE" to "CHARGE", simply turn the knobs to "charge".



Gun Charging & Safety



BEFORE ENTERING THE COCKPIT

NOTE THE FOLLOWING SPEED LIMITATIONS

ITEM	OPERATION	RESTRICTION
Airplane	Max. Diving Speed	Dependent on altitude
Landing Gear	Lowering	200 Knots (230 mph)
Dive Brake	Extending or Retracting	195 Knots (224 mph)
Wing Flaps		
Blow Up Operating (0° To 50°)	Max. Speed	200 knots (230 mph)
Blow Up Inoperative (0° To 50°)	Max. Speed	200 knots (230 mph)
(20° To 30°)	Max. Speed	170 knots (196 mph)
(30° To 40°)	Max. Speed	145 knots (167 mph)
(40° To 50°)	Max. Speed	130 knots (150 mph)
Cabin	Open	300 knots (345 mph)
Ailerons	Full Throw	300 knots (345 mph)
Cooling Flaps	Open	No restriction
Center Drop Tank	Diving	300 knots (345 mph)
Twin Pylon Drop Tank	Diving	300 knots (345 mph)

BEFORE ALL FLIGHTS

1. Make sure the mixture control is in "Idle Cut Off" then turn on the battery switch.
2. Check the fuel and oil quantity aboard
3. Make certain that the wings are spread unlocked.
4. Test operate the gun sight illumination.
5. See that the gyro horizon and directional gyro are uncaged.
6. Set the altimeter to the correct barometric pressure.
7. Check to ascertain that the desired armament load is carried.
8. See that all armament switches are in the "OFF" position and that the gun charging valves are in the "safe" position.

BEFORE NIGHT FLIGHTS

In addition to the standard check for flights for night flights, turn on the battery switch and check the following items :

1. Interior lights.
Instrument board lights. Check the instrument board lights by turning on the rheostat located on the pilot's distribution box.
2. Exterior lights.
Check the formation, section, recognition wing and tail lights by turning on the respective switches and the exterior light master switch which can be found on the pilots distribution.



FUEL SYSTEM MANAGEMENT

The fuel system is managed with two controls, the fuel selector and the electric auxiliary fuel pump switch. The normal flow of gasoline in the system is as follows, the fuel flows from the tank outlet for which the fuel selector valve is set, through the valve, the electric auxiliary fuel pump, the strain drain units and the engine-driven fuel pump, to the inlets on the carburettor.

DROP TANK RELEASE

The drum tanks may be released either manually or electrically

The center line drop tank can only be released manually; the release is located on the left side of the main instrument panel. To drop the tank, turn the switch to release.

The pylon tanks and bombs can be released either manually or electrically.

The manual drop tank release controls are on the left-hand shelf. To release a drop tank, pull the desired release control to the limit of its extension. A force of three or four positive G's will aid in dropping the tanks.

To release a drop tank electrically, proceed as follows:

1. Turn the master armament switch to "ON".
2. Select the tank to be dropped, turning the design bomb release switch to "RELEASE".
3. Press the thumb button on the control stick.

FUEL TANK SELECTION

Use droppable tank and wing tank fuel before using the main tank fuel, except as noted immediately below.

Note: Set fuel tank selector on "RESERVE" for takeoff, landing, diving and maneuvers. Do not cruise on "RESERVE".

ELECTRICAL AUXILIARY FUEL PUMP

The electrical auxiliary fuel pump is used for :

- Starting.
- Takeoff and landing.
- Changing from one tank to another.
- If fuel pressure drops below 16 pounds per square inch.
- After failure of engine-driven fuel pump.
- To maintain fuel pressure during high power, high altitude operation.

Note:

It is possible, on airplanes equipped with center section twin pylons, to operate at very high altitudes while using fuel from the drop tank if the auxiliary fuel pump is switched on; under such conditions, keep a close watch on fuel pressure and cylinder head temperature. Shifts to drop tanks should be made below 19,000 feet, since it may be impossible to start fuel flow from the drop tank above this altitude.



STARTING THE ENGINE

PROCEDURE

1. Ignition switch to "OFF".
2. Mixture control to idle "cut off".
3. Clean engine fuel by pulling propeller by hand through four or five revolutions in the direction of operation
4. Fuel selector to "RESERVE".
5. Pump the hydraulic hand pump at least 5 times. Do not exceed 300psi. ("Cockpit - Left" on page 19) and set engine cowl flaps fully open.
6. Supercharger control to "NEUTRAL" (full forward).
7. Throttle. Set to red quadrant mark approximately 1 inch open.
8. Battery switch "ON".
9. Electrical auxiliary pump fuel switch to "ON".
10. Electric primer switch "ON" - 5 to 15 seconds depending upon temperature and condition of the engine immediately prior to operating the starter.
11. Ignition switch on "both".
12. Starter switch "ON" until engine runs smoothly.
13. Mixture control move slowly from "Idle Cutoff" to "Auto Rich" as soon as engine fires. If moved too rapidly, engine will die.
14. Primer switch "ON" intermittently until engine runs smoothly.
15. Electric auxiliary fuel pump to "OFF" when changing mixture control setting.

Caution

Do not pump or move the throttle abruptly until the engine is running smoothly.

Note

Normally, it should be necessary to operate the starter for no more than 30 seconds in order to start the engine. If the starter switch is held on for 1 minute and the engine does not start, allow the starter to cool before making another attempt.

FAILURE OF ENGINE TO START ON FIRST ATTEMPT

If the engine does not start, wait a few minutes to allow any spilled fuel to drain out of the intake ducts. If the engine is over primed, clean the cylinders and induction system of excess fuel as follows,

1. Ignition switch off.
2. Mixture control idle cuts off.
3. Throttle full open or closed.
4. Electric auxiliary fuel pump switch off.
5. Clean engine by pulling propeller by hand through four or five revolutions in the direction of normal operation

WARM UP & GROUND TEST

For warm-up and ground testing the following should be observed

1. Propeller control maximum rpm "INCREASE".
2. Cowl flaps fully open".
3. Oil cooler flaps "CLOSED".
4. Intercooler flaps "OPEN".
5. Mixture control "auto rich".
6. Cylinder head temperature 232° C (450° F) maximum. If cylinder head temperatures approach 232° C (450° F), the engine should be cooled at 1000 rpm before continuing with the ground test.

ENGINE WARM UP

1. Check oil pressure. With cold oil, oil pressure may be above 200 pounds per square inch until the oil in temperature is approximately 40° C.

2. Idle at 1,000 rpm until oil temperature is 40° C (104° F) and cylinder head temperature is 120° C (228° F).

Caution: Do not idle below 800 rpm any longer than is necessary to avoid fouling plugs.



SCRAMBLE TAKE-OFF

It is possible to make an emergency take-off providing the oil temperature is above 40° C (104° F.) In cases of extreme emergency, when the above temperatures cannot be met, run the engine up; if it does not operate roughly or cut out altogether, take off.

TAXI INSTRUCTIONS

- Use the S-turn procedure for adequate forward visibility on taxi strips. However, let the airplane roll as freely by possible, using the brakes as an aid in steering, stopping and holding only.
- Use the tail wheel lock in extended crosswind taxiing to relieve excessive braking action.
- Use low power when taxiing. Don't rev up the engine and then ride the brakes. Bear in mind the badly overheated brakes are not fully effective and can fuse the disc brakes to the extent of leaving them frozen for landing.

TAKE-OFF CHECKLIST

1. Wings spread and locked.
Check to see the wing fold control is in the spread position, that closure doors at wing joints are closed, that mechanical wing hinge pin locking handle is in the lock position and pin locking indicator is down.
2. Arresting hook control to "UP".
3. Fuel tank selector to "RESERVE"
4. Mixture to "Auto Rich".
5. Supercharger control to "NEUTRAL".
6. Propeller control to maximum rpm "INCREASE".
7. Cow flaps 2/3 open.
8. Intercooler flap "CLOSED".
9. Oil cooler flaps "OPEN" is required.
10. Rudder tab 6° "NOSE RIGHT".
11. Aileron tab 6° "RIGHT-WING DOWN".
12. Elevator tab 1° "NOSE UP".
13. Wing flaps set as required.
14. Tail wheel locked.
15. Manifold pressure limits - 54 inches Hg.
16. Check to see the cylinder head and oil temperatures are above the minimum and not near the limits.

TAKE-OFF

For normal operation it is recommended that the setting of 20° be used for take-off. Actually, any flap setting from 0° to 50° may be used, the highest settings giving shorter ground distance. Take-offs with flaps up are easily accomplished with a small increase in run, dispensing with the inconvenience of retracting the flaps after takeoff. In addition, the rate of climb immediately after takeoff with flaps deflected is inferior to that with flaps up. Take-off at high flap setting and full flap should be made only when it is necessary to obtain the shortest possible ground run, and after more experience with settings increased gradually from the recommended setting of 20°. When a high flap setting is used. The elevator trim should be set slightly more tail heavy about 1°. it is been found with flaps down the tail can't be held on the ground, with a stick full-back, and manifold pressure is greater than 44 inches Hg.

MINIMUM RUN TAKE-OFF

1. Wing flaps full "DOWN" to 50°.
2. Propeller governor maximum rpm "increase"
3. Manifold pressure 54 inches Hg. 60 Inches Hg at war emergency power.
4. Elevator 3 - 4° "nose up."
5. Hold brakes slightly until tail starts to rise.
6. Release brakes and allow tail to rise to near level flight attitude (tail high).
7. Take off when minimum flying speed is attained (approximately 70 knots indicated - 81 mph). The nose will be slightly heavy. If the take-off is made from an unpaved or muddy runway, take off with the tail slightly lower than directed above.

Note: If an obstacle is to be cleared during takeoff, the wing flap setting should be reduced to approximately 30°.



AFTER TAKE OFF

For most efficient operation :

1. Reduce manifold pressure to not more than 44.0 inches Hg.
2. Reduce rpm to not more than 2550.
3. Retract landing gear.
4. Retract wing flaps.
5. Trim airplane for 125 knots indicated airspeed for best climb.
6. Adjust cowl flaps if necessary.
7. Adjust oil cooler flaps if necessary.
8. Set fuel tank selector to desired setting.
9. Mixture control should remain at "Auto Rich" during climb.

WAR EMERGENCY POWER

War emergency power 2700 rpm (5 mins max).

To obtain war emergency power

1. Mixture control "Auto Rich".
2. Propeller control maximum rpm "INCREASE".
3. Throttle "Full Open".
4. Click assigned switch (see below).

When activated, water injection light will illuminate.

For WEP key assignment

1. Go to option menu -> Control -> key assignments.
2. Choose your controller for WEP assignment.
3. Use search window, type "War Emergency Power".
4. Click "Choose Event, War Emergency Power"
5. Click "new" (if WEP has not assigned yet) or click "change" to change an existing preset WEP key switch/command

CRUISING

The engine should be operated in "Auto Lean" for cruising power operation. If a cylinder temperature of 232°C (450° F) is exceeded the mixture should be enriched.

MAXIMUM PERMISSIBLE INDICATED AIRSPEED AND ACCELERATIONS

The maximum permissible speeds and accelerations are shown on graph 1 for gross weight of 12,000 lb. At other weights the permissible accelerations are such as to maintain a constant product of gross weight and acceleration, except that 7.5 G positive and 3.4 G negative should not be exceeded.

Warning: Pilots should avoid steep dive angles because of the difficulty encountered in attempting to reduce speed and acceleration quickly if buffeting should occur.

For convenience, the restrictions given in the graph may be simplified by the following approximations :
For diving or maneuvering at 3.0 G.

Altitude	Speed
10,000 Ft	390 knots (449 mph)
20,000 Ft	335 knots (386 mph)
30,000 Ft	255 knots (293 mph)

STALLS

The stalling characteristics of the airplane are not abnormal and warning of the approach of the stall exists in tail buffeting, the abnormal nose up attitude, and increasing left-wing heaviness with power on. The center of gravity positions enforced by wartime requirements are further to the rear than would normally be desirable. This results in the low degree of longitudinal stability. While the elevator forces are generally normal in direction, they vary only a small amount and approaching the stall with power on, and the control movement is very small. Thus the elevator control force and position do not provide the normal degree of feel warning of change in air speed or angle of attack. Pilots should observe carefully and familiarize themselves with this characteristic in the landing approach condition and in maneuvering turns which approach the stall at higher speeds. They should be done at various flat positions and powers until pilots are thoroughly familiar with the airplane in these conditions.



STALLS (CONTINUED)

The stall with power on is rather pronounced particular with flaps down but is preceded by some warning in the nature of buffeting. In the carrier approach condition, the approach to the stall is indicated to some extent by increasing left-wing heaviness and increasing amount of right rudder required. The stall in this condition (flaps down power on) is accompanied by a relatively sharp roll to the left

Note: Pilots should familiarize themselves thoroughly with the stall in both straight flight and tight turns.

STALLS WARNING LIGHTS

The stall warning light is installed near the top of the main instrument panel (see page 21) and it will come on a few knots before the stall. A test which is provided so that the pilot can check while in flight, to see that the lamp is not burned out. The stall warning should operate from 4 to 8 knots (5-10 mph) above the stall in the landing condition, and 14 to 18 knots (17-21 mph) above the stall in the clean condition.

SPIN RECOVERY

1. Apply full opposite control sharply leading with opposite rudder, and follow by applying full-forward stick. Apply ailerons against the spin.
2. Hold full reverse controls until rotation stops and airplane assumes normal diving attitude.

3. Ease the airplane out of the ensuing dive. Do not pull the stick back to rapidly as a high-speed stall may result requiring more altitude for recovery.
4. The rate of rotation will probably increase after full opposite controls are used. Don't be alarmed; this is a good sign and recovery is starting.
5. Use trim tabs if forces are too heavy, especially the elevator trim. The later is effective in reducing push forces during spin recovery.
6. Oscillation is present in left spins. The nose oscillates between a position varying from approximately on the horizon to 40° - 50° below the horizon. This does not mean that's a flat spin is developing. Recovery will be normal. Recovery will be faster if controls are reversed when the nose is at a steep angle in the oscillation.
7. If full opposite controls cannot be held and the stick walks back, return the controls with the spin for a brief interval and repeat full recovery control.

Note

Full forward stick against stop must be applied for spin recovery in this airplane. Make certain that full reverse controls are used promptly and sharply and held until recovery is effected.

The indicated stalling speeds for a 11,300 lb fighter (178 US gallons 148 imperial gallons of fuel; 1200 rounds of ammunition) are given in the table below. For other weights see charts on pages 43 & 44.

CONDITIONS	FLAPS	POWER	INDICATED STALLING SPEED
Landing	50°	closed throttle	75
Landing	30°	closed throttle	77
Landing	20°	closed throttle	79
Landing	50°	power on level flight 23 inches Hg 2400 rpm	66
Cleaning	up	closed throttle	87
Clean	up	power on level flight 18 inches Hg 2400 rpm	84



DIVING

Checklist:

1. Cabin closed
2. Landing gear control "UP".
3. Drive brake control "OFF" or "ON" as desired.
4. Wing flaps "UP".
5. Propeller control set at 2050 - 2250 rpm.
6. Mixture "Auto Rich".
7. Supercharged control neutral blower shall be used for dives except those incident to military tactics at high altitudes.
8. Throttle slightly open. Shift to neutral blower before retarding throttle.
9. Fuel tank selector "RESERVE".
10. Cowl flaps "closed".
11. Oil cooler flaps "closed".
12. Intercooler flaps "closed".
13. Maximum rpm limit 3060 rpm (not over 30 second duration).

Caution: 15 to 20 inches of manifold pressure is recommended during prolonged dives.

The cockpit cabin sliding section must be closed before entering high-speed dives as it is not designed for such speeds in the open position. In the open position speeds up to 300 knots indicated (345 mph) are allowable.

DIVE BRAKE CONTROL

The type brake control may be operated at any speed within the normal airplane restrictions. When the dive brake control is operated at speeds greater than 260 knots, (299 mph) the wheels will trail instead of extending fully and locking but are nevertheless effective as a dive brake.

Caution: Do not dive the airplane with the tail wheel extended (landing gear control to "DOWN") as damage to the tail wheel doors due to high air loads may results.

APPROACH & LANDING

Checklist:

1. Tail wheel locked for field (Free for carrier).
2. Electric fuel pump "ON".
3. Fuel tank selector "RESERVE".
4. Mixture "Auto Rich".
5. Supercharger control "NEUTRAL".
6. Propeller control 2300 rpm to 2400 rpm.
7. Cowl flaps "closed".
8. Landing gear "DOWN".
9. Wing flaps at 50° or as required for field landing. (50° For carrier).
10. Arresting hook "UP" the field. ("DOWN" for carrier).
11. Gun switch "OFF".
12. Gun charging knobs "SAFE" (push in).
13. Rockets and pylon switches "off".
14. Rocket safety plug removed.

LANDING

1. Extend landing gear at a speed less than 200 knots (230 mph).
2. Lower flaps to desired setting.
3. Observe items on check-off list.
4. Open cabin.
5. Air speed in approach 90 - 95 knots

Warning: Pilot should avoid flat approaches.

STOPPING THE ENGINE

TO STOP ENGINE

1. Electric fuel pump "OFF".
2. Mixture control "Idle Cut Off"
3. Ignition switch "OFF".
4. Battery switch "OFF".
5. Fuel selector "OFF".
6. Turn off all switches used for flights (radio lights etc.)



FLYING TIPS FOR THE F4U/FG-1D FAMILY

The Corsair was the infamous Ensign Eliminator, beware the unwary, club fisted, and inexperienced. The most challenging flight regimes are Takeoff, Landing and Carrier operations.

Takeoff can be exciting indeed, directional control being the main concern. Blower should be in Neutral (lever full forward). Recommended trim settings and tail wheel lock are essential. Both Rudder trim (I use full right) and aileron trim are of great assistance. Due to engine torque the plane has a serious tendency to drop the left wing just after liftoff and the aileron trim helps this. There is a lot of power out front! The simulator is not as effective in modeling prop blast on the rudder as with the real plane so some care in advancing the throttle on takeoff is necessary. Smoothly advance to about 40" and feed in right rudder to counteract the left swinging tendency. As the rudder becomes more effective as the plane gains speed feed in the power till mil power is obtained. At max torque minor differential braking can be helpful if the rudder is not keeping you straight. As the plane accelerates less rudder will be necessary, with the slight nose up trim the plane will most likely fly off three point. If you do raise the tail expect a considerable left swing! As the plane lifts off be prepared for possible wing drop. Airborne raise the gear and begin retracting flaps. Reduce engine power to the desired climb setting, reducing MP first then RPM. 2550 is a good RPM to use. Re trim as necessary as the increasing airspeed will require more neutral trim settings. Cowl flaps can be modulated to a position that will keep the CHT values in the normal range.

Climbing or descending attention is paid to optimal blower selection. For max performance climb blower will be shifted to Low at about 5,000' and 18,000' to high. For lower power requirements the blower can be left in a lower stage as long as the MP requirements are met. This is somewhat more efficient operation as the higher blower stages rob the engine of a lot of shaft power.

The Corsair used automatic mixture control with normal operation n Auto Rich or Auto Lean ranges. For climb and high power operation Auto Rich is used, Auto Lean for normal cruise and descent.

Landing... You will develop your own technique, but make sure that the Tail Wheel is locked (handle in the down position). The plane is easier to land at lighter weights, which allow lower approach speeds. Somewhere around 95 knots for maneuvering to final is a good speed with 90 knots on short final. the plane lands best with a full three point landing and decelerates quickly in the flare with power reduction and full flaps. You may want to experiment with partial flap (30 deg) landings to start with. Wheel landings can be made but you may get a spectacular bounce or two.

Carrier operations! Yes this is a Carrier Aircraft! For takeoff again the proper trim settings and TW lock are essential. I like 50 deg flaps, but 30 is usable at lighter weights. Wind over the deck is quite necessary and 25 knots would be a minimum. Typically 25-28 knots carrier speed plus 10-15 knots trade winds would give as much as 40 knots wind over the deck. This greatly simplifies operations. A slight turn after takeoff helps clear the path of the ship such that you don't get run over by the ship in case of a mishap. Clean up the plane and adjust power as you would for a field takeoff.



FLYING TIPS

To fly a Carrier pattern, fly straight ahead for maybe 15 seconds and make a 180 degree left turn, climbing to 600'. I usually leave the flaps at 30 deg and fly at about 100 knots. On downwind Extend the landing gear, drop the tail hook and go to flaps 50. Close the cowl flaps and make sure the canopy is locked open. At about even with the carrier stack (or LSO if light winds or ship speed) begin your 180 deg turn to the groove. Ideally you will have an extremely short straight final. The technique is to make a circular approach to keep the LSO in sight. As vision aid I have a joystick button assigned to slewing the eye point to the left so as to sight along the cowl, this was a natural technique for long nosed planes such as the Corsair and Seafire. Think your dogs view of riding in the car... Ideally you have your weight under 11,000 lbs and approach at about 87 knots. A somewhat steep approach will give you a better estimation of your touchdown spot. Do not get low and slow! When you get the cut (in your estimation) cut the throttle and pull the stick back and flop onto the deck. If you have extra deck speed the plane will tend to pitch strongly nose down on arrestment. This is not realistic but a result of the sim effect being hardwired for nose draggers.

After landing roll back slightly, retract the hook, open the cowl flaps, retract the flaps and fold the wings, clearing the landing zone for the next landing event! Congrats!

- Tom Falley

Tom Falley, is a multi-aircraft rated pilot with many years of experience



OXYGEN

The oxygen supply system is located to the right of the Pilot's seat. During normal operations the oxygen lever should be set to "ON" .

- Use oxygen on all flights above 10,000 ft
- Use oxygen on night flights above 5000 ft

Mask- off operations above the specified ceilings will cause flight controls to freeze

RADIO

The Milviz FG-1D features a AN/ARC-5 which must be tuned using the MVAMS utility (see "radios" on page 14).

The C-26/ARC-5 ADF is a navigation radio that controls a needle on the compass which will point to the tuned station. Rotate the knob to acquire the ADF frequency. (Range = 190 - 550 Khz). Once the frequency is set, if the signal is available, the ADF indicator will show the direction.



Oxygen

TRANSMITTING & RECEIVING

1. Switch the toggle switch to the "ON" position to operate transmitting equipment on either MHF or VHF.
2. Use the channel selector to set the desired preset channel (1-9).

The ATC system can be used, or users can transmit over VATSIM/IVAO.



Radios



ELECTRICAL EQUIPMENT

1. A volt-ammeter located on the right-hand sub-instrument panel color indicates the generator output in amperes. This will vary according to the charge condition of the battery and the amount of electrical equipment being used. A push button is supplied on the volt-ammeter which when pushed, indicates voltage. When the engine is stopped, or when at any time the rpm is less than 1300, push the button in to indicate battery voltage. The generator voltage should read between 27.5 And 25.5 Volts.
2. A battery switch is provided which disconnects the battery from the remainder of electrical system. With this switch in the "OFF" position, the generator cannot deliver current to the battery, nor can the battery deliver current to any external load except the recognition lights and inertia switch. When the airplane is on the ground with engine off, the battery switch, recognition light switches and inertia switch should be "OFF". For starting the engine and for ground running and flight operation, the battery switch should be "ON".
3. The emergency generator switch located on the pilot's distribution box is normally closed. Power for the electrical system is thus obtained from the generator, regulated by the voltage regulator and measured by the volt-ammeter.
4. An instrument switch is installed on the pilot's distribution box which operates the electric fuel gauge, electric oil temperature gauge, carburettor air temperature warning lights, and remote compass. It is of the switch-breaker type and is used in conjunction with the battery switch; it must be "ON" for airplane and engine operation.



*Pilot's Distribution
Box*



OPERATION OF ARMAMENT

Note: Trigger and Pickle commands are assigned via the TacPack manager.

For gun charging and safetying please see
Cockpit & Controls: GUN CHARGING CONTROL

FIRING GUNS

1. Turn on the master armament switch.
2. Turn on the individual gun switches.
3. Press the trigger switch;
the guns will fire as long as it is closed.

GUN SIGHT

The Mark 8 illuminated gun sight is located on the cowl deck above the instrument panel. The gun sight switch and the rheostat for the gun sight lights are on the gun switch box. The gun sight which has three positions "ON", "OFF," and "ALT". The "ALT" position (alternate filament) is not modeled.

For gun sight operation:

1. Ensure engine is running.
2. Alt/generator - "ON".
3. Master avionics - "ON".
4. Gun sight - "ON".

BOMBS

Provision is made for carrying bombs on the twin pylons. A set of switches located on the bomb switch box controls bomb arming and selection of the bomb to be released. The thumb switch for releasing the bombs is located on the control stick.

Bombs may be released either manually or electrically in the same manner as droppable fuel tanks.

To release bombs:

1. Master arm - "ON"
2. Bomb fuse setting - "TAIL ARMING" or "NOSE & TAIL ARMING"
3. Bomb release switches - "ON"
4. Press TACPACK pickle
(or pull the handles next to the seat without bomb release switches on).

If the bomb fuses are not armed, the bombs will not explode. This can be used as a jettison technique.



Bomb And Sight Controls



Bomb & Tank Release



ROCKETS

Provision is made for installing four rocket launchers in pairs on each outer wing panel. The rockets are fired in pairs, the outboard pair being launched first - either one pair at a time or in automatic succession. The controls for firing the rockets are as follows :

- Master switch located on the gun switch box.
- The rocket power switch and the single-auto selector switch on the Mark 3 station distributor which is installed in the right hand side of the cockpit just aft of the main instrument panel.
- The rockets are launched by means of the TACPACK pickle or thumb button on the rocket firing switch, which is located on the left hand side of the cap fits in a position corresponding to that of the Mark 3 station distributor.



Rocket Control

LAUNCHING ROCKETS

The procedure for launching the rockets is as follows:

1. Turn master armament switch to "ARM".
2. Flip back the guard over the rocket power switch and turn the switch "ON".
3. Set "SINGLE-AUTO" switch.
If set at "single" the rocket release button must be pressed once for each pair of rockets. If set at "AUTO", the rockets are fired in pairs at 10th of a second intervals
4. Press the TACPACK pickle to fire.

An indicator light is provided on the station distributor box which shows, when lighted, that the rockets are ready to be fired. The light will glow when the safety plug is inserted and the rocket power switch and master armaments switch are in the "ON" position.

A station indicating dial is installed on the Mark 3 station distributor indicating the next pair of rockets to be launched.

The handle which is pulled to reset the rocket station counter is not used. The counter is reset by changing the payload in the loadout manager



EMERGENCY LANDING GEAR OPERATION

The landing gear can be extended if there is complete failure of the hydraulic system, that is, even if no action can be obtained by operating the hand pump.

The emergency gear extension is actuated by a CO2 system on the main gear and a spring system on the tail wheel. However, before resorting to emergency landing gear extension, attempt to lower the gear with the hand pump, since subsequent retraction may be desired and will be impossible once the CO2 system is operated.

To lower the landing gear with the hand pump:

1. Move the landing gear control to down.
2. Operate the hand pump until the landing gear indicators show that the gear is fully down and locked

The following procedure is used for emergency extension of landing gear in case of actual failure of the hydraulic system:

1. Close throttle and reduce speed to about 110 knots.
2. Open the emergency landing gear release valve. The valve is located to the left of the Pilot's seat.

Note the CO2 system will extend the landing gear regardless of the position of the landing gear control handle, but it is recommended that the control handle be placed in the down position.

Further reduce speed to about 90 knots (keep above the stalling speed) while the landing gear is extending.

Check the indicators that the landing gear and tail wheel are fully locked down.

The emergency extension of the landing gear is started at a comparatively high speed so that the airflow will assist in opening the landing gear doors.

Turning the emergency landing gear release valve admits CO2 to a sequence valve which actuates two unloader valves, the unloader valves bypassing the hydraulic oil at the bottom of the landing gear and tail wheel struts, directly back to the hydraulic reservoir. The sequence valve in turn admits CO2 pressure to the top of the landing gear struts thereby extending the gear. The early models incorporating a pull handle emergency release work on much the same principle.



ENGINE FAILURE DURING FLIGHT

Engine failure is noticeable in either of the following conditions :

1. Freezing of engine.
2. Drop in altitude and loss of speed.

If engine fails but does not freeze, no absence of engine noise is apparent since the wind-milling propeller simulates normal engine operation. Also, in this condition manifold pressure can be increased and decreased normally, and the propeller blade angle can be changed within certain limits. While the propeller is wind-milling, the hydraulic system can be operated normally. However, if the engine should freeze or rough operation should necessitate stopping the engine by placing the propeller governor in high pitch (minimum RPM) position, the hydraulically controlled units must be operated by the hand pump ("Cockpit - Left" on page 19).

If altitude permits, attempt to find the cause of engine failure by the following procedure:

- The selected tank may be empty. Switch to another tank.
- If it is apparent that the fault does not lie in fuel system operation and altitude still permits, check the following:
 1. Move the mixture control to Auto rich
 2. Test the Magneto's individually.

If, after completing the above operations, the engine does not start, prepare for an emergency landing. Note the gliding ratio of this airplane in the clean condition at 140 knots indicated airspeed (best gliding speed) is 13:1.

FORCED LANDINGS

In the event of a forced landing over land the pilot should consider a number of variables in order to determine his best landing attitude. These include altitude, type of terrain and the characteristics of the airplane.

Landings in soft or uneven terrain such as golf courses or plowed fields and in rough, rocky, or tree stump to rain should be made with landing gear up. Most nose-overs occur as a result of landing in such territory with the landing gear down, and nearly all serious injuries and fatalities results from nosing over.

Pilot should remember the ground which appears smooth and level from the air frequently turns out to be rough, crossed with ditches, soft or full of obstructions when the actual landing is made. All forced landings should be made well above the stalling speed. There will be no control of the airplane if an attempt is made to land at, or slightly above stalling speed. The plane should be on the ground before that stage of deceleration is reached.

BELLY LANDINGS

Preparation for belly landing:

1. Release droppable fuel tanks or bombs.
2. Landing gear "UP".
3. Landing flaps "DOWN".
4. Shoulder harness and safety belts "LOCKED".
5. Jettison the cockpit sliding section.
6. Fuel tank pressure release "AFT".

Prior to contact with the ground:

1. Drop pilot seat several inches.
2. Switches (battery, ignition) "OFF".
3. Fuel selector "OFF".
4. Master Armament switch "OFF".

WATER LANDINGS (DITCHING)

The same procedure as has been outlined for belly Landings is applicable to ditching.

Note this airplane has excellent water characteristics due to the inverted gull-wing which causes it to plane on contact with the water because of the planing feature, a full stall Landing is not necessary





Maryadi - System Programmer
Jonathan Bleeker - Software Programmer
Tom Falley - Flight Dynamics
Mike Maarse - Sound Environment
Dmi Usaty - Modeling & Paint
Kevin Miller - Initial Modeling & Paint
Tom Stovall - Paints, Liveries & Imagery
Robbie Nauffts - Additional Liveries & Imagery
Rafal "YoYo" Stankiewicz - Imagery & Paints
Ville Keränen - Videographer
Chuck Jodry - Additional Code & Imagery
John Terrell - Reference Photographs
Oisín Little - Manual

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Creative Director - Colin Pearson
Marketing Manager - Jim Stewart
Project Manager - Kat Namsavanh
Customer Service - Oisín Little

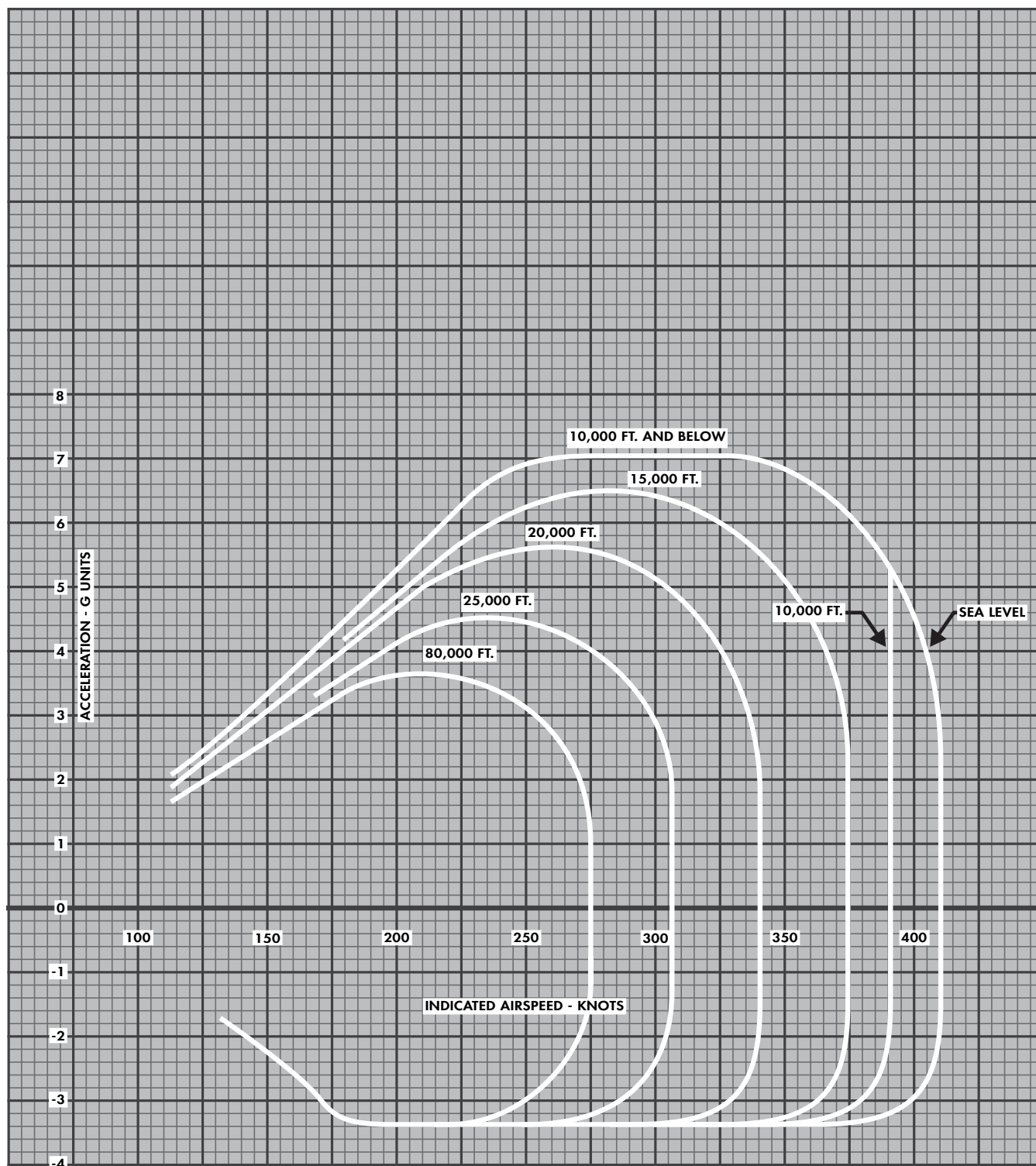


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FG-1D OPERATING FLIGHT STRENGTH DIAGRAM
GROSS WEIGHT 12,000 POUNDS

Operating Flight Strength Diagram



FG-1D
corsair

R-2800-8

SPECIFIC ENGINE FLIGHT CHART

MAXIMUM PERMISSIBLE DIVING RPM: 3060	
CONDITION	ALLOWABLE OIL CONSUMPTION
NORMAL RATED (MAX. CONT.)	32 U.S. QT/HR 53 IMP. PT/HR
MAX. CRUISE	16 U.S. QT/HR 26 IMP. PT/HR
MIN. SPECIFIC	U.S. QT/HR IMP. PT/HR
OIL GRADE: (S)1100 (N) 1100	

FUEL GRADE: 100 130 OCTANE — SPEC. AN-F-28.

CONDITION	FUEL PRESSURE (LB. SQ. IN.)	OIL PRESSURE (LB. SQ. IN.)	OIL TEMP.	
			°C	°F
DESIRED	17	60-90	60-80	140-194
MAXIMUM	18	100	100	212
MINIMUM	16	50	40	104
IDLING	7	25		

SUPERCHARGER TYPE: TWO STAGE, TWO SPEED

OPERATING CONDITION	RPM	MANIFOLD PRESSURE (BOOST)	HORSE POWER	CRITICAL ALTITUDE		BLOWER	USE LOW BLOWER BELOW	USE NEUTRAL BLOWER BELOW	MIXTURE CONTROL POSITION	FUEL FLOW (GAL. HR.)		MAXIMUM CYL. TEMP.		MAXIMUM DURATION (MIN.)
				WITH RAMNO RAM	S.L.					U.S.	IMP.	°C	°F	
TAKE-OFF	2770	54.0	2000	S.L.	S.L.	N	—	—	AUTO RICH	290	240	260	500	5
WAR EMERGENCY	2770	57.5	2250	S.L.	S.L.	N	17000	8000	AUTO RICH	245	205	—	—	5
	2770	59.0	2135	15000	17000	L				245	205			
	2770	59.5	1975	20000	17000	H				245	205			
MILITARY	2770	52.5	2000	2500	2000	N	20000	6000	AUTO RICH	290	2000	260	500	5
	2770	53.0	1800	18500	16000	L				275	16000			
	2770	53.0	1650	23000	21000	H				280	21000			
NORMAL RATED (MAX. CONT.)	2550	44.0	1675	7000	5500	N	21000	10000	AUTO RICH	220	5500	260	500	—
	2550	49.5	1625	19000	16500	L				240	16500			
	2550	49.5	1550	24000	22000	H				250	22000			
MAXIMUM CRUISE	2150	34.0	1070	10000	10000	N	22000	13000	AUTO LEAN	83	10000	232	450	
	2150	34.0	970	20500	20500	L				93	20500			
	2050	34.0	950	26000	26000	H				82	26000			
MINIMUM FUEL CONSUMPTION	1330	30.0	570	5000	5000	N				42	35			
	920	26.5	570	10000	10000					43	36			
	570	23.5	600	15500	15500					51	42			
	1550	28.0	600	15500	15500	L	22000	15500	AUTO LEAN	50	42	232	450	
	1700	26.0	595	20000	20000					53	44			
	1800	25.0	610	22000	22000					56	47			
	1700	28.0	660	22000	22000	H				57	48			
	1750	25.5	600	25000	25000					58	48			
	2000	25.5	650	30000	30000					65	54			

REMARKS: RED FIGURES HAVE NOT BEEN FLIGHT CHECKED

Specific Engine Flight Chart



FG-1D corsair

TAKE-OFF, CLIMB & LANDING CHART

TAKE-OFF, DISTANCE IN FEET FOR 30° FLAP SETTING

GROSS WEIGHT (IN LBS.)	HEAD WIND (KNOTS)	HARD DRY SURFACE				FIRM DRY SOD				WET OR SLIPPERY			
		AT SEA LEVEL		AT 3000 FT.		AT 6000 FT.		AT 3000 FT.		AT SEA LEVEL		AT 3000 FT.	
		GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.
11700	0	680	1350	810	1620	1020	2090	710	1380	850	1650	790	1440
	15	430	980	550	1190	700	1560	470	1000	580	1210	520	1050
	30	260	650	340	810	440	1070	270	660	350	820	310	690
	45	120	360	130	470	230	650	130	370	180	480	140	380
13100	0	910	1870	1080	2270	1370	3070	930	1910	1140	2330	1090	2050
	15	620	1380	750	1690	980	2340	630	1410	790	1740	750	1510
	30	180	830	460	1160	620	1640	400	850	490	1190	450	910
	45	190	550	260	720	360	1030	200	360	280	730	230	590
14200	0	1110	2380	1330	2970	1730	4250	1170	2440	1410	3050	1370	2640
	15	370	1780	940	2250	1240	3260	810	1830	1000	2300	950	1960
	30	480	1240	600	1580	810	2330	510	1260	640	1620	390	1350
	45	260	760	340	990	490	1530	280	780	370	1010	320	820

NOTE: INCREASE DISTANCE 10% FOR EACH 10° (20°F) ABOVE 0°C (32°F)

ENGINE LIMITS FOR TAKE-OFF 2700 RPM AND 54" HG. AT SEA LEVEL

CLIMB DATA

FOR COMBAT CLIMB USE MILITARY POWER FOR 5 MIN. ONLY
— THEN NORMAL POWER

SEE ENGINE FLIGHT CHART FOR OPERATING LIMITS

FOR FERRY CLIMB: USE MAXIMUM CRUISING POWER

GROSS WEIGHT (LBS.)	TYPE OF CLIMB	SEA LEVEL TO 5000 FT. ALT.				TO 10000 FT. ALT.				TO 15000 FT. ALT.				TO 20000 FT. ALT.				TO 25000 FT. ALT.				TO 30000 FT. ALT.									
		BEST I.A.S. (KNOTS)	FT./MIN. AT ALT.	TIME FROM S.L.	FUEL FROM SEA LEVEL U.S. IMP.	BEST I.A.S. (KNOTS)	FT./MIN. AT ALT.	TIME FROM S.L.	FUEL FROM SEA LEVEL U.S. IMP.	BEST I.A.S. (KNOTS)	FT./MIN. AT ALT.	TIME FROM S.L.	FUEL FROM SEA LEVEL U.S. IMP.	BEST I.A.S. (KNOTS)	FT./MIN. AT ALT.	TIME FROM S.L.	FUEL FROM SEA LEVEL U.S. IMP.	BEST I.A.S. (KNOTS)	FT./MIN. AT ALT.	TIME FROM S.L.	FUEL FROM SEA LEVEL U.S. IMP.	BEST I.A.S. (KNOTS)	FT./MIN. AT ALT.	TIME FROM S.L.	FUEL FROM SEA LEVEL U.S. IMP.						
11700	COMBAT	135	2700	2	18	15	135	2700	4	28	23	130	2600	6	36	29	130	1900	8	45	36	125	1500	11	55	44	120	500	19	79	64
	FERRY	130	1500	4	14	11	130	1400	7	19	15	130	1200	11	25	20	130	1000	16	31	25	125	700	22	39	31	—	—	—	—	
13100	COMBAT	135	2100	2	20	16	135	2100	5	33	27	130	1600	8	45	36	130	1400	11	58	47	125	1000	15	71	57	—	—	—	—	
	FERRY	130	1100	5	16	13	130	1000	10	23	19	130	800	16	32	26	130	600	23	42	34	125	300	34	56	45	—	—	—	—	
14200	COMBAT	135	1800	3	22	18	135	1800	5	37	30	130	1300	9	52	42	130	1100	13	66	53	125	700	19	86	69	—	—	—	—	
	FERRY	125	800	6	18	15	125	700	12	27	22	125	500	21	39	31	125	400	32	54	43	—	—	—	—	—	—	—	—	—	

NOTE: INCREASE ELAPSED CLIMBING TIME 6% FOR EACH 10°C (20°F) ABOVE 0°C (32°F)

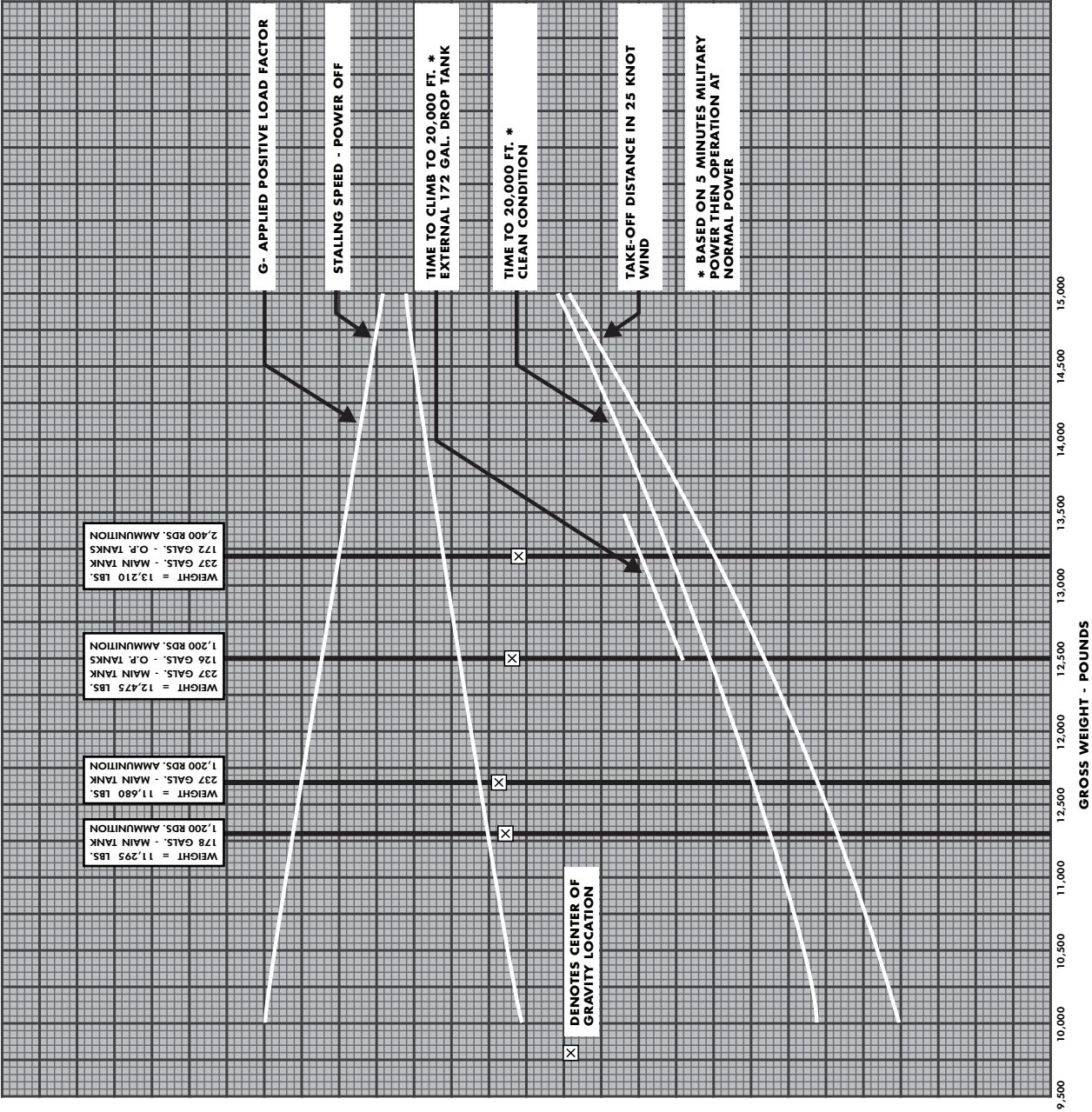
FUEL INCLUDES WARM-UP & TAKE-OFF ALLOWANCE (10 US GALS., 8 IMP. GAL.)

TAKE-OFF, DISTANCE IN FEET FOR 30° FLAP SETTING

GROSS WEIGHT (LBS.)	BEST I.A.S. (KNOTS)	HARD DRY SURFACE				FIRM DRY SOD				WET OR SLIPPERY			
		AT SEA LEVEL		AT 3000 FT.		AT 6000 FT.		AT SEA LEVEL		AT SEA LEVEL		AT 3000 FT.	
		GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.
10000	90	1920	910	2080	990	2250	1090	2000	990	2180	1090	2360	1200
	95	2080	910	2280	1090	2480	1210	2140	1030	2390	1200	2610	1330
11000	90	1920	910	2080	990	2250	1090	2000	990	2180	1090	2360	1200
	95	2080	910	2280	1090	2480	1210	2140	1030	2390	1200	2610	1330

NOTE: FOR GROUND TEMPERATURES ABOVE 35°C INCREASE APPROACH I.A.S. 10% AND ALLOW 10% INCREASE IN GROUND ROLL

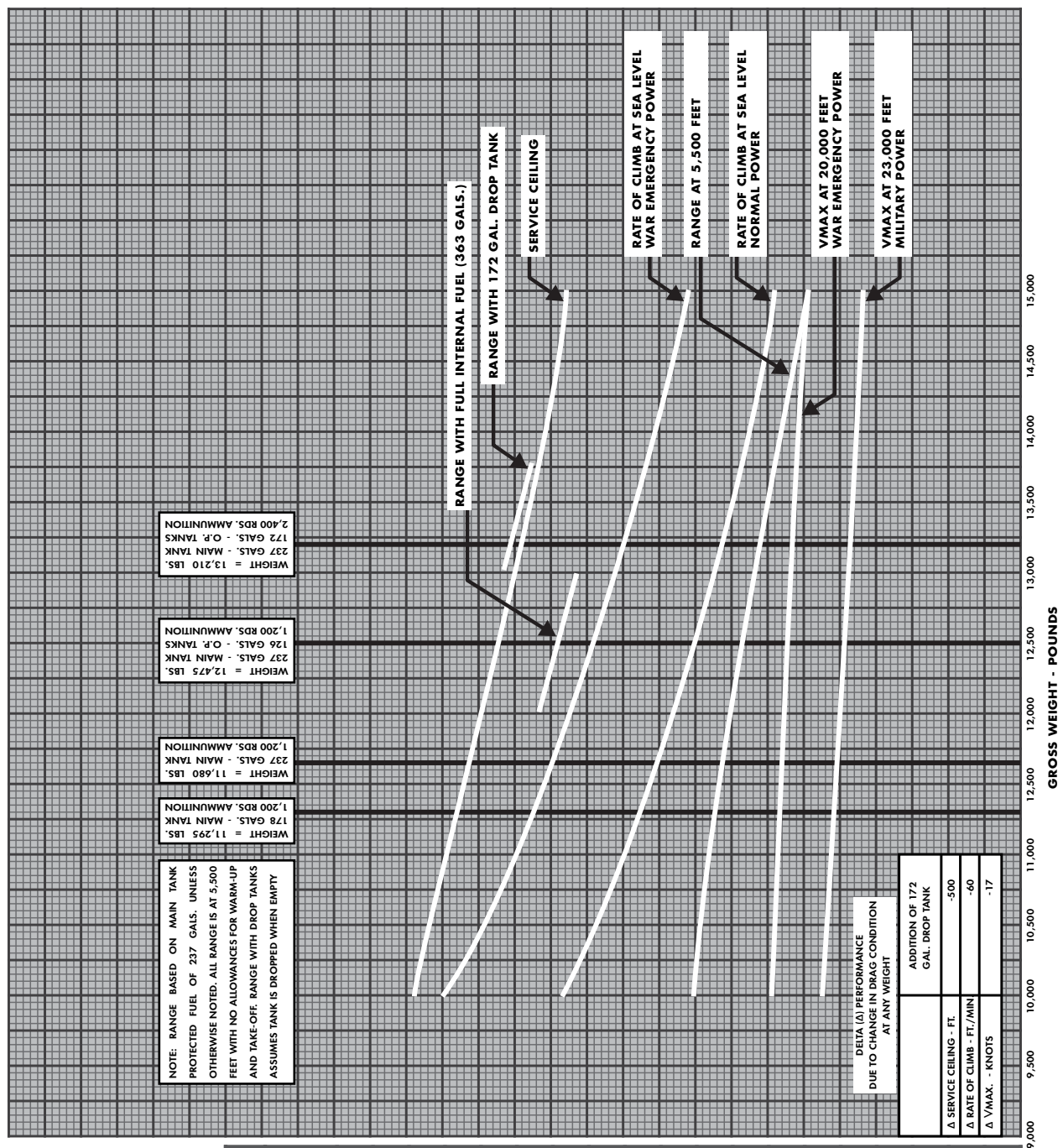
Take-Off, Climb And Landing Chart



Variation Of
Performance With
Weight (1)

TAKE-OFF DISTANCE - FEET	STALLING SPEED - KNOTS	TIME TO CLIMB TO 20,000 FEET - MINUTES	G-APPLIED POSITIVE LOAD FACTOR	C.G. LOCATION - % M.A.C.
600	60	70	2	30
500	50	14	0	20
400	40	12	8	10
300	30	6	6	0
200	20	4	4	0
100	10	2	2	0
0	0	0	0	0





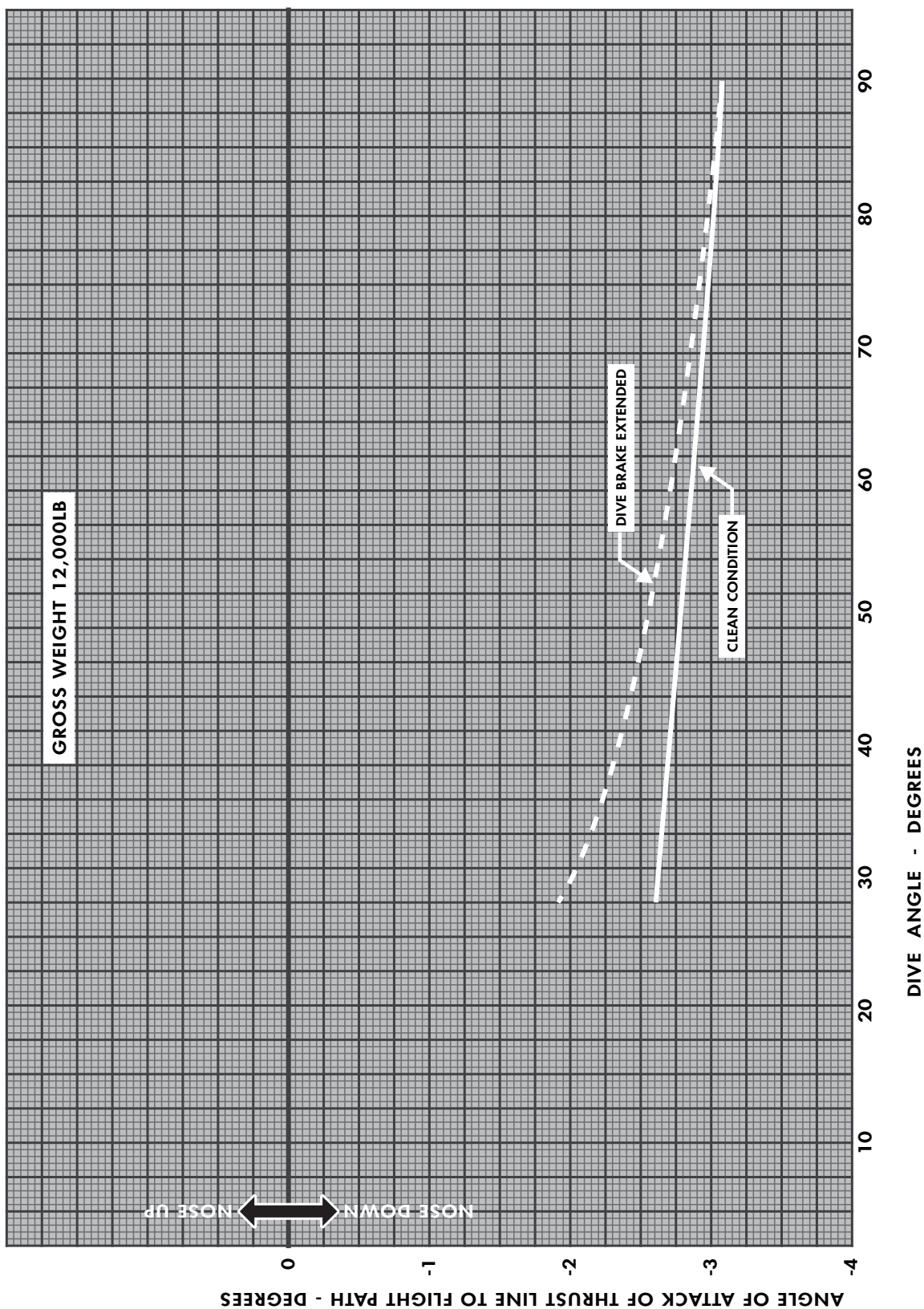
NOTE: RANGE BASED ON MAIN TANK PROTECTED FUEL OF 237 GALS. UNLESS OTHERWISE NOTED. ALL RANGE IS AT 5,500 FEET WITH NO ALLOWANCES FOR WARM-UP AND TAKE-OFF. RANGE WITH DROP TANKS ASSUMES TANK IS DROPPED WHEN EMPTY

WEIGHT = 11,295 LBS. 178 GALS. - MAIN TANK 1,200 RDS. AMMUNITION	WEIGHT = 11,680 LBS. 237 GALS. - MAIN TANK 1,200 RDS. AMMUNITION	WEIGHT = 12,475 LBS. 237 GALS. - MAIN TANK 1,200 RDS. AMMUNITION	WEIGHT = 13,210 LBS. 237 GALS. - MAIN TANK 172 GALS. - O.P. TANKS 2,400 RDS. AMMUNITION
--	--	--	--

Variation Of Performance With Weight (2)

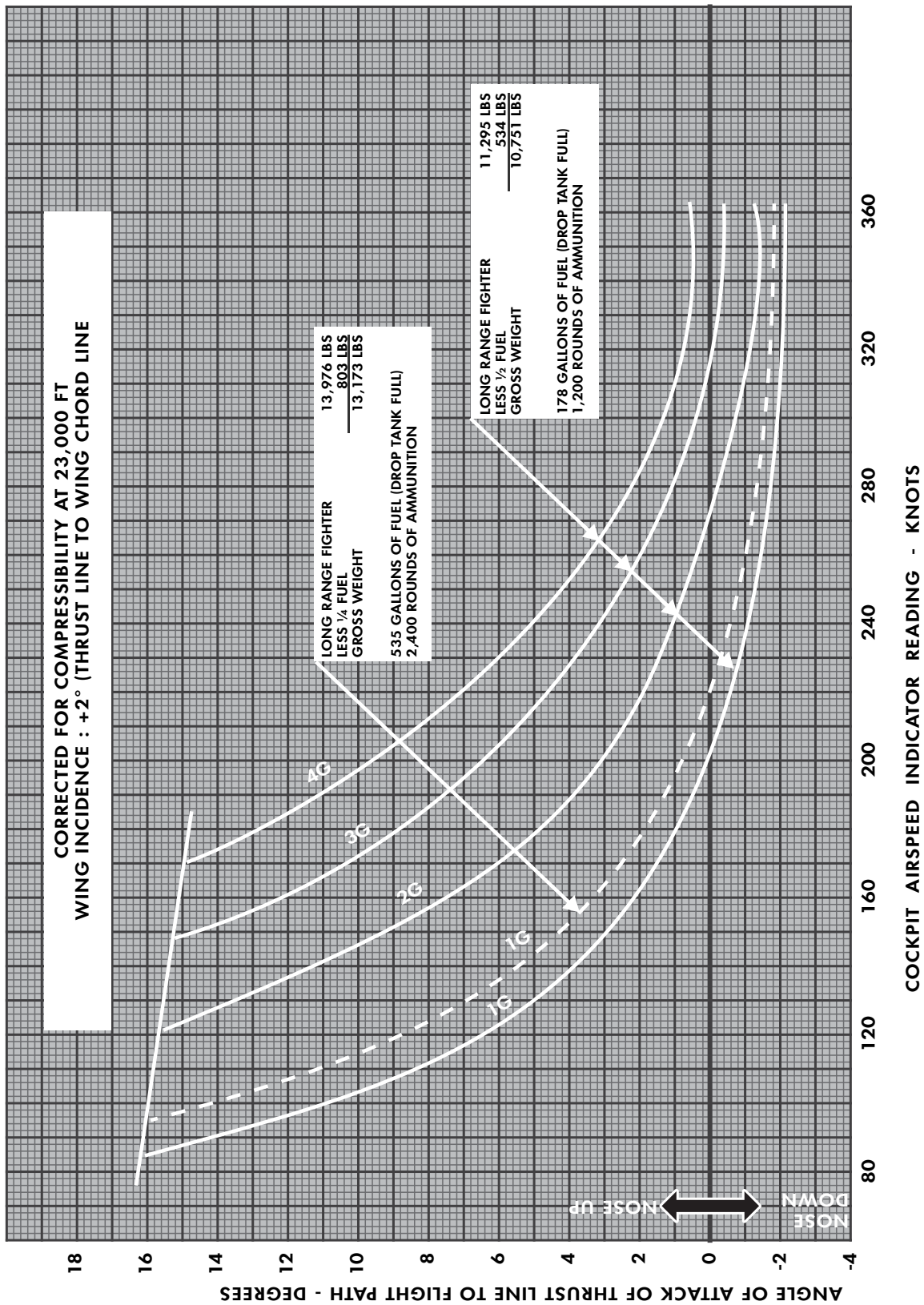
RATE OF CLIMB - FEET PER MINUTE	RANGE - NAUTICAL MILES	VMAX - KNOTS	SERVICE CEILING - FEET	
5,000	2,200		50,000	
4,500	2,000		45,000	
4,000	1,800		40,000	
3,500	1,600		35,000	
3,000	1,400		30,000	
2,500	1,200		25,000	
2,000	1,000		20,000	
1,500	800		15,000	
1,000	600		10,000	
500	400		5,000	
0	200		S.L.	





Angle Of Attack At Terminal Velocity Vs Dive Angle





Angle Of Attack Vs Cockpit Airspeed Indicator Reading





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AVIATION, August, 1942



FG-1D corsair

